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S. HRG. 103-684

THE CONVENTION ON BIOLOGICAL DIVERSITY
(TREATY DOC. 103-20)

Y 4. F 76/2: S. HRG. 103-684

The Convention of Biological Divers...

HEARING
BEFORE THE
COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE
ONE HUNDRED THIRD CONGRESS
SECOND SESSION

APRIL 12, 1994

Printed for the use of the Committee on Foreign Relations



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(III)

THE CONVENTION ON BIOLOGICAL DIVERSITY (TREATY DOC. 103-20)

TUESDAY, APRIL 12, 1994

U.S. SENATE,
COMMITTEE ON FOREIGN RELATIONS
Washington, DC.

The committee met, pursuant to notice, at 10:03 a.m. in room SD-419, Dirksen Senate Office Building, Hon. Claiborne Pell (chairman of the committee) presiding.

Present: Senators Pell, Kerry, and Jeffords.

The CHAIRMAN. The Committee on Foreign Relations will come to order.

It is a very real pleasure to welcome our witnesses to the committee for today's hearing on the Convention on Biological Diversity. We all look forward to their testimony, and in particular we wish to welcome two current colleagues, Senators Baucus and Chafee, and our former colleague, Tim Wirth. Together with our public witnesses, we have a highly qualified set of individuals to discuss the convention.

In my own view, the need for this convention is very clear. The extraordinary rate of loss of biological diversity that we are now experiencing carries real risk for the future. The importance of biological diversity cannot be understated. Quite literally, we are talking about the material of life.

The loss of biodiversity is not just about the large, charismatic animals with which we are all familiar. Scientists estimate that there are between 10 and 100 million species of which only roughly 1.5 million have been identified. Most of the destruction occurs with species we have not even heard of, and now will know nothing about.

While some may argue that humans have done well without worrying about the loss of these species, I would argue for caution because we do not know what the value is of those that we are losing.

I would go into some of the details of the use of biological diversity, but having reviewed the testimony of our witnesses I think they will speak more eloquently on this subject.

The convention before the committee today has three objectives—the conservation of biological diversity, its sustainable use, and the equitable sharing of its benefits. At the time the convention was open for signature, the Bush administration declined to sign, citing concerns about the convention's provisions on financing, technology transfer, and protection of intellectual property rights.

I applaud the present administration for the efforts it has made to address these concerns in a manner that addresses both indus-

try and environmental interests. With these understandings in place, I think the United States can move ahead toward ratification of the treaty. It is all the more important, since the treaty entered into force on December 29, 1993.

The first meeting of the parties will be held this coming November. That meeting will take a number of decisions that will have a decisive impact on the convention's implementation.

I think it would behoove the Senate to ensure that our country can participate as a party in those decisions and not as a spectator.

I believe Senators Baucus and Chafee are here to testify, and I would ask Senator Chafee if he would open up.

STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM RHODE ISLAND

Senator CHAFEE. Thank you very much, Mr. Chairman. I have a longer statement I would like to put in the record.

The CHAIRMAN. Without objection.

Senator CHAFEE. First, Mr. Chairman, I would like to thank you for holding this hearing to consider the Convention on Biological Diversity. This, as I know, is an area you have been deeply interested in for many years and, of course, you made the trip down to Rio I guess it was nearly 2 years ago now. I remember that trip very well. I had the pleasure of going with you.

This convention is an important first step. It will help ensure conservation of the world's vital biological resources for future generations, and like you I strongly support its prompt ratification.

The United States has been a leader in the effort to conserve biological diversity which is, of course, the variety of species, their habitats, and the ecosystems. I guess the model legislation is our Endangered Species Act of 1973, which indeed has been a model for other species protection efforts around the world.

Also, the U.S. leadership was critical to the adoption of the CITES Treaty, which is the Convention on International Trade in Endangered Species of Wild Flora and Fauna, which by its title and in actually does limit world trade in rare and endangered species.

The loss of species is one of the world's most serious environmental problems. Species that are in trouble can rebound. I guess one of the most amazing things that I have discovered since I have been involved with these environmental efforts, particularly since being in Congress, is if you give nature half a chance it will come back, but you have got to give nature that half a chance. So, endangered and threatened species can be recovered; with effort they can be. But once the species is lost, it is gone forever.

Sometimes it is easy to forget in our high tech society that we still depend upon our biological resources. For example, the catch of finfish and shellfish is the world's largest single source of animal protein. More than 25 percent of medical prescriptions are filled by drugs derived from natural plants.

Roughly one-half of the gains in U.S. agriculture from 1930 to 1980, a 50-year period, one-half of the those gains in U.S. agriculture were due to use of genetic material from our natural environment, from biodiversity, in other words.

In fact, the expanding biotechnology industry has made possible far greater use of biodiversity. There is a growing demand for the genes and chemicals that remain untapped within the world's remaining wild lands.

The Convention on Biological Diversity negotiated 2 years ago at the Earth Summit in Rio is a modest but it is a critical first step in recognizing the importance of biological diversity. Frankly, it seems to me it fails to set out as strong a mandate to protect biodiversity as I would like to see. However, it does provide an international framework for the conservation and sustainable use of biodiversity.

The convention requires parties to take four basic steps which are, first, develop national strategies for conservation. Two, establish a system of protected areas. Three, begin to rehabilitate damaged ecosystems. Four, integrate the consideration of conserving biological resources into national decisionmaking.

Now, the U.S. has laws on the books which address each of these responsibilities. So, therefore, I agree with what the administration is saying, that no new national legislation and no changes in existing legislation are needed in the U.S. to comply with the treaty.

In his primer on biological diversity, namely "The Diversity of Life" by Dr. E. O. Wilson, he advises us to conserve first and ask questions later. And this is what that wise man said, "We should judge every scrap of biodiversity as priceless while we learn to use it and come to understand what it means to humanity."

So, I urge the committee to recommend ratification of this convention, because the treaty is clearly in the best interests of the Nation and of the world.

I want to thank you, Mr. Chairman, for this opportunity.

[The prepared statement of Senator Chafee follows:]

PREPARED STATEMENT OF SENATOR JOHN H. CHAFEE

I want to thank you, Mr. Chairman, for holding this hearing to consider the Convention on Biological Diversity. The Convention is an important first step. It will help to ensure conservation of the world's vital biological resources for future generations. I strongly support its prompt ratification.

The United States has been a leader in the effort to conserve biological diversity—the variety of species, their habitats and the ecosystems on which they depend. Our Endangered Species Act of 1973 has been a model for other species' protection efforts around the world.

United States' leadership was also critical to the adoption of the CITES treaty (the Convention on International Trade in Endangered Species of Wild Flora and Fauna), which limits world trade in rare and endangered species.

The loss of species is one of the world's most serious environmental problems. Species that are in trouble can rebound. Endangered and threatened species can be recovered. But once we have lost a species, it is gone forever.

It is easy to forget in our high-tech society that we still depend upon our biological resources. The catch of finfish and shellfish is the world's largest single source of animal protein. More than 25 percent of medical prescriptions are filled by drugs derived from natural plants. Roughly one-half of the gains in U.S. agriculture from 1930 to 1980 were due to use of genetic material from our natural environment—from biodiversity. In fact, the expanding biotechnology industry has made possible far greater use of biodiversity. There is a growing demand for the genes and chemicals that remain untapped within the world's remaining wildlands.

The Convention on Biological Diversity negotiated two years ago at the Earth Summit in Rio de Janeiro is a modest but critical first step in recognizing the importance of biological diversity. Frankly, it fails to set out as strong a mandate to protect biodiversity as I would like. However, it does provide an international framework for the conservation and sustainable use of biodiversity. The Convention requires parties to take four basic steps: (1) develop national strategies for conserva-

tion; (2) establish a system of protected areas; (3) begin to rehabilitate damaged ecosystems; and (4) integrate the consideration of conserving biological resources into national decision making.

The United States already has laws on the books which address each of these responsibilities. Therefore, I agree with the administration's assessment that no new national legislation, and no changes in existing legislation, are needed to comply with the treaty.

Initially, the Convention was criticized for failing to adequately protect intellectual property rights and was opposed by the biotechnology industry. The critical point is that the Convention is consistent with intellectual property rights. In fact, it explicitly recognizes those rights. It also recognizes the principle that developing countries should benefit from the use of their biological resources. The Convention, however requires that this sharing must be on mutually beneficial and voluntary terms.

Despite the Convention's recognition of intellectual property rights, the biotechnology industry remained concerned about potentially troublesome interpretations of several vague provisions of the treaty. Fortunately, the Administration was able to work with leaders of the biotechnology industry to formulate an interpretive statement addressing their concerns.

This interpretive statement, in the form of the President's letter of submittal, makes clear that the Convention requires all Parties to ensure the adequate and effective protection of intellectual property rights. It states that nothing in the Convention relieves any Party of their duty to fully protect these rights. Further, the submittal letter stresses that the Convention provides that any sharing of benefits derived from biological resources shall be on mutually agreed upon terms. The letter clarifies that this means at the discretion of, and with the voluntary consent of, the owner of the technology.

Funding, is also a critical issue. It is clear that developing nations will need technical and financial Support for their efforts to conserve their more considerable biological resources so that everyone can benefit from their conservation and sustainable use. It is equally clear that contributions must be negotiated to the satisfaction of all parties. There was considerable debate about this issue Rio, with the developed nations supporting the Global Environmental Fund (GEF) as the funding mechanism the developing nations opposing the GEF, except as are interim solution. I understand that negotiations to restructure the GEF to the satisfaction of all parties are nearly complete. If problems with the GEF are resolved can continue to serve as the funding mechanism, substantially resolving the funding issue.

As of December 30, 1993, the Convention entered force. The best way to address any remaining concern by becoming a Party to the treaty, so that the United States can participate in the Convention and ensure that our interests are fully represented.

I would conclude with a reminder about the severe continuing loss of biological diversity. Without a concerted effort to conserve these critical resources we will all lose. How many medicines, crops, and raw materials are disappearing along with the biodiversity that would make their discovery and development possible?

In his primer on biological diversity, *The Diversity of Life*, Dr. E.O. Wilson advises us to conserve first and ask questions later. He said: "We should judge every scrap of biodiversity as priceless while we learn to use it and come to understand what it means to humanity."

I urge the Committee to recommend ratification of the Convention on Biological Diversity as clearly in the best interest of this nation and the world.

The CHAIRMAN. Thank you very much, indeed, and am I correct in saying that you strongly believe that no further implementing legislation is needed if this goes through?

Senator CHAFEE. That is my belief, yes, Mr. Chairman.

The CHAIRMAN. Good. Well, I thank you very much indeed, and I thank you for taking the time to be here. Your full statement will be inserted in the record.

Senator CHAFEE. Fine. Thank you very much.

The CHAIRMAN. Senator Baucus will be coming in a little bit later, so I would ask Senator Wirth if he would come forward. I would say, we hope to address you as Under Secretary before too many days go by. In the meantime we will just use Counselor.

STATEMENT OF HON. TIMOTHY E. WIRTH, COUNSELOR, DEPARTMENT OF STATE; ACCOMPANIED BY RAFE POMERANCE, DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENT AND DEVELOPMENT

Mr. WIRTH. Thank you very much, Mr. Chairman. It is a pleasure to be here and to follow my good friend, Senator John Chafee, in supporting this treaty. On behalf of the administration I am joined at the witness table today by Mr. Rafe Pomerance, well known to this committee for all of his efforts over so many years in areas of economics and the environment.

I would ask unanimous consent, Mr. Chairman, if I might that my full statement be included in the record along with a set of annexes related to the understandings of the administration related to the treaty.

The CHAIRMAN. Without objection they will be inserted in the record.

Mr. WIRTH. Thank you.

The CHAIRMAN. I would add here that when Senator Baucus turns up, I would hope that you would be willing to step to one side while he makes his statement.

Mr. WIRTH. Absolutely. Thank you, Mr. Chairman.

I am pleased to be here today to urge your support for ratification of the Convention on Biodiversity, and we were delighted to see your opening statement, consistent with your long history of supporting these important international agreements.

By joining with other countries in implementing the convention, the United States can continue to play a leadership role in ensuring that future generations can enjoy the economic, health, nutritional, aesthetic, and other benefits derived from our planet's rich biological inheritance.

This treaty has been the subject of extensive review and discussion among U.S. Government Agencies and U.S. commercial and environmental interests, as well as the U.S. Congress. Concerns that have been raised about some of the treaty's provisions were examined in detail and have been addressed.

We believe strongly that U.S. interests will be best served by ratifying the convention and working to implement its provisions in an effective manner, a position I believe which will be reflected by later witnesses this morning.

Before discussing how the convention addresses the problem of biodiversity loss, it is important to understand what biodiversity is and why we should be concerned with maintaining it for this and future generations.

Most simply stated, biodiversity is the sum total of all life forms that exist on Earth. It is the wealth of species, ecosystems and ecological processes that help make possible our economic and environmental systems.

Estimates of the number of species, as you pointed out in your opening statement, range from 10 to 100 million, yet only some 1.4 million are currently known to science.

We can, Mr. Chairman, measure the distance to the moon to a matter of centimeter, but we cannot even narrow estimates of the number of species here on Earth to below a factor of 10. Such

knowledge is important because biodiversity is vital to the well being of humankind.

At the most basic level we depend on the Earth's biodiversity for food, fiber, medicines, and for its contributions to the health of ecosystems. Additionally, biological materials are fundamental in our industrial processes, and enable development of new products from the rapidly expanding field of biotechnology.

For example, plant species provide the active ingredients, as Senator Chafee pointed out, for an estimated 25 percent of the prescription drugs sold in the United States, and currently the top 10 sellers in the pharmaceutical industry are deeply dependent upon the wealth of biodiversity.

For U.S. agriculture, based largely on food crops that originated in other parts of the world, our industry remains dependent on the use of poorly known and often poorly protected wild strains from outside the United States.

By using genetic diversity in plant breeding programs to improve crop yields, agriculture has increased its productivity dramatically over the last 60 years, and we continue to improve our corn, wheat, soybeans, and other crops in an extremely dependent and important fashion.

We have barely begun to understand the value of the 1.4 million species that have been cataloged to date. We can only guess the potential value to humankind of the millions of species that are yet to be discovered in the oceans and on land.

These resources are like vast libraries of knowledge completely obscured from our comprehension. The largest of these libraries are found outside of the United States and constitute a critical resource that this and future generations can use to solve some of the globe's most pressing concerns.

Already there has been promising research on newly discovered species and genetically engineered products that could prove valuable, for example, in dealing with problems of AIDS, oil spills, world hunger, and the rest.

Tragically, despite the overwhelming importance of biodiversity it is being lost at alarming rates. In the past decade a broad scientific consensus has emerged that biodiversity is being lost faster today than at any time since the dinosaurs became extinct some 65 million years ago.

Unlike previous extinctions, which were primarily a result of natural events, this destruction of our planet's life forms is largely a result of human action, in particular the degradation of biologically rich ecosystems like tropical rainforests, grasslands, and coral reefs.

If current trends persist, some 20 percent of the Earth's species may become extinct by the year 2020.

The CHAIRMAN. If I could interrupt you for a moment, would it be agreeable with you if Senator Baucus made his statement at this point?

Mr. WIRTH. Absolutely.

Senator BAUCUS. Mr. Chairman, thank you very much but I would prefer to defer to the Secretary, and I will wait until he is finished.

The CHAIRMAN. Very well, then, carry on.

Mr. WIRTH. I thank Senator Baucus for his courtesy but I am at a perfect break point if he wishes.

Senator BAUCUS. No, go ahead.

Mr. WIRTH. The Biodiversity Convention is an unprecedented effort by the nations of the world to take action now to deal with biodiversity loss before it is too late. The convention does this, as you pointed out, in three ways—by calling for domestic actions to conserve biodiversity, and second, encouraging the sustainable use of biodiversity, and third, promoting benefit sharing.

The convention seeks to achieve these objectives through a series of provisions. As an essential first step for national actions, the convention calls on all parties to adopt sound national conservation regimes similar to those that the United States has long had in place.

The convention also recognizes that biodiversity can be used in perpetuity to benefit humankind. The second major objective of the convention is, thus, to provide the sustainable use of biodiversity by emphasizing measures to realize the economic and other benefits of biodiversity in a sustainable manner. The convention encourages countries to conserve their biodiversity.

Third, because so much of the planet's biodiversity lies in the less developed countries, the convention places great emphasis on the promotion of benefit sharing through international cooperation. The U.S. supports this concept by which benefits stemming from the productive use of the genetic flow of resources flow back to those nations that act to conserve biological diversity and provide access to their genetic resources.

The benefit sharing provisions provide an important, market-based incentive for countries to protect their resources. Under one such arrangement, for example, the National Cancer Institute is studying a vine in Cameroon that contains a potentially promising anti-HIV agent. Should this particular substance fulfill its initial promise, Cameroon would realize significant benefits from development of these resources.

As noted above, as you pointed out in your statement, and Senator Chafee reflected in his, no implementing legislation will be required. The existing assemblage of Federal, State, and private sector biodiversity programs comprising numerous State and Federal laws and programs, an extensive system of Federal and State wildlife management areas, marine sanctuaries, parks and forests, and research and education programs is considered sufficient in meeting our responsibilities.

The administration does not intend to disrupt the existing balance of State and Federal authorities through this convention and, indeed, is committed to expanding and strengthening these productive partnerships.

U.S. funding for convention related activities will be handled through periodic contributions to global environmental facilities. The United States is committed to provide \$430 million over the next 4 years toward replenishment of the recently restructured GEF. Total pledges by all countries come to slightly more than \$2 billion. And it is through this facility that we plan to assist in global climate change, biodiversity, oceans management, and in one

other area in very minor fashion, the convention related to ozone depleting substances.

As you know, Mr. Chairman, industry has expressed concerns about the way some of the language in the convention is drafted, particularly on the issues of intellectual property rights protection, terms of transfer of technology, and participation in U.S. research projects.

We share these concerns, but feel we can best protect U.S. interests by first sending clear messages to the rest of the world as to how the U.S. expects these provisions to be implemented by all parties. And second, participating actively in the convention to protect U.S. intellectual property rights. And third, depositing with our instrument of ratification statements of understanding on specific issues raised in the articles of the convention.

Specifically, we propose to deposit with our instrument of ratification, statements of U.S. understanding that make clear our positions on the issues of technology transfer and intellectual property rights, on research, on funding, on sovereign immunity, and on the article 3 principle.

The content of these understandings is provided in detail in the annex to my testimony.

On the critical issues of technology transfer, our understandings make clear that any access to and transfer of technology that occurs under the convention must recognize and be consistent with the adequate and effective protection of intellectual property rights.

The U.S. understandings also make clear that the term, fair and most favorable terms for technology transfer contained in article 16(2) of the convention means terms that are voluntarily agreed to by all parties to the transaction.

This lays down the clear marker to all other countries that the convention cannot be used by any party to unilaterally impose terms of obligations on any other party regarding technology transfer. A supplemental statement on this from the U.S. Patent and Trademark Office is also attached to my statement.

With respect to provisions addressing the conduct and location of research based on genetic resources, our understandings emphasize that the convention cannot serve as a basis for any party unilaterally to change the terms of existing agreements involving public or private U.S. entities. We further clarify which provisions of the convention apply to research conducted by the U.S. Government and which apply to research by private entities.

Industry representatives have also inquired as to U.S. intentions regarding the negotiation of a biosafety protocol. We stated at the time that we signed the convention that the need for a protocol must be demonstrated before further steps are considered.

At the first intergovernmental meeting related to the convention we restated this position, adding that based on our experience we do not feel that a biosafety protocol to this convention is warranted. However, should negotiations on a protocol eventually proceed, we will be in a much better position to protect U.S. interests if we have a seat at the table.

Finally, many have asked what mechanisms are available to the United States to ensure that any decisions of the conference of the parties accord with U.S. interests. First, we will ensure that the

conference of the parties' rules of procedure, which will be adopted by consensus, are fully acceptable to the United States.

Second, we have supported a proposal to require that all decisions concerning the financial mechanism are also made by consensus.

Most importantly, however, the conference of the parties could not legally bind the United States to a legal interpretation of the convention that the U.S. did not accept. The United States will have an opportunity to formally accept or reject any amendment or protocol to the convention.

We believe the approach outlined above, which has broad support among both U.S. commercial and environmental groups, adequately addresses concerns raised by convention provisions.

It is worth noting that the debate over certain convention provisions opened the door to an unprecedented display of cooperation among U.S. industry and environmental organizations to forge a common understanding on the convention.

We hope, Mr. Chairman, that the ratification of the convention will be a further step in this cooperation, and that we will move even more dramatically to take advantage of this in the 21st century, which surely will be the century of biology.

There is enormous promise in this area, as you pointed out in your opening remarks, Mr. Chairman. We believe ratification of the convention is in the best interests of the United States overall, is in the interest of our leading industries in this area, and will be a major step toward protecting biodiversity around the world.

We thank you very much for your prompt hearing on this subject, and we hope that ratification can occur by August 31, which is the deadline by which we have to submit to the United Nations our instruments of ratification so that we can be a party at the next conference of the parties meeting early this fall.

Thank you very much, Mr. Chairman.

[The prepared statement of Mr. Wirth and additional material follow:]

PREPARED STATEMENT OF TIMOTHY E. WIRTH

Good morning Mr. Chairman, Members of the Committee. I am pleased to be here today to urge your support for ratification of the Convention on Biological Diversity, which was signed by the United States on June 4, 1993. This comprehensive agreement, signed by 170 nations and ratified by more than 50, marks an unprecedented worldwide commitment to stem the loss of the earth's species, their habitats, and ecosystems. By joining with other countries in implementing the Convention, the United States can continue to play a leadership role in ensuring that future generations can enjoy the economic, health, nutritional, aesthetic, and other benefits derived from our planet's rich biological inheritance.

This treaty has been the subject of extensive review and discussion among U.S. government agencies, and U.S. commercial, and environmental interests, and the U.S. Congress as well. Concerns that have been raised about some of the treaty's provisions were examined in detail and have been addressed. We believe strongly that U.S. interests will be best served by ratifying the Convention and working to implement its provisions in an effective manner.

Indeed, the United States has for some time been pioneering efforts to preserve biodiversity under existing U.S. laws that meet the Convention's requirements for domestic action. Therefore, no implementing legislation or changes in U.S. regulations or existing state-federal relationships will be needed to fulfill the domestic requirements of a convention Party.

The Conference of the Parties will designate an institutional structure to operate the financial mechanism under the Convention. Assuming that the Global Environment Facility (GEF) is chosen as the permanent institutional structure, the United

States will implement its funding obligations through its periodic contributions to the GEF. The GEF is a unique cooperative arrangement between the World Bank, United Nations Development Programme and the United Nations Environment Programme. It has been restructured in order, in part, to support the Biodiversity Convention.

The Biodiversity Issue

Before discussing how the Convention addresses the problem of biodiversity loss, it is important to understand what biodiversity is and why we should be concerned with maintaining it for this and future generations. Most simply stated, biodiversity is the sum total of all life forms that exist on Earth; it is the wealth of species, ecosystems and ecological processes that help make possible our economic and environmental systems. Estimates of the number of species that make up the earth's biodiversity range from 10 to 100 million, yet only some 1.4 million are currently known to science. We can measure the distance to the moon to a matter of centimeters, but we can't even narrow estimates of the number of species here on earth to below a factor of ten.

Such knowledge is important because biodiversity is vital to the well-being of humankind. At the most basic level, we depend on the earth's biodiversity for food, fiber, medicines, and for its contribution to the health of ecosystems. Additionally, biological materials are fundamental in our industrial processes and enable development of new products from the rapidly expanding field of biotechnology. For example, plant species provide the active ingredient for an estimated 25 percent of the prescription drugs sold in the United States, with an annual market value well over \$10 billion. A number of important medical compounds have been developed from marine organisms. For example, sponges are the source of anti-viral-drugs with annual sales of \$50 to \$100 million.

Even beyond the promise for new drugs, uses of biodiversity have revolutionized medical technologies. A bacteria discovered in Yellowstone's hot springs has allowed us to dramatically reduce the time required to analyze medical tests, so tests that took days can now be done in hours. The cumulative effect of these savings on the health and productivity of our workforce cannot be underestimated.

For U.S. agriculture, which is based largely on food crops that originated in other parts of the world, our industry remains dependent on the use of poorly known and often poorly protected wild strains from outside the United States. U.S. wheat farmers, for example, are using varieties developed from wild strains in the Near East that are resistant to aphids and other pests. Using genetic diversity in plant breeding programs to improve crop yields, U.S. agriculture has increased its productivity dramatically over the past 60 years. Experts estimate that this use of biodiversity has added a value of about \$3.2 billion to our \$11 billion annual production of soybeans, and about \$7 billion in added value to our \$18 billion annual corn crop.

We have barely begun to understand the value of the 1.4 million species that have been catalogued to date. We can only guess the potential value to humankind of the millions of species that are not yet discovered in the oceans and on land. These resources are like vast libraries of knowledge completely obscured from our comprehension. The largest of these libraries are found outside the United States and constitute a critical resource that this and future generations can use to solve some of the globe's most pressing concerns. Already, there has been much promising research on newly discovered species and genetically-engineered products that could prove valuable in being used in dealing with problems from AIDS, to oil spills, to world hunger.

Tragically, despite the overwhelming importance of biodiversity, it is now being lost at alarming rates. In the past decade, a broad scientific consensus has emerged that biodiversity is being lost faster today than at any time since the dinosaurs became extinct some 65 million years ago. Unlike previous extinctions, which were primarily a result of natural events, this destruction of our planet's life forms is largely a result of human action, in particular the degradation of biologically rich ecosystems like tropical rainforests, grasslands, and coral reefs. If current trends persist, some 20 percent of the earth's species may become extinct by the year 2020, and we will have failed in our task as stewards for our children and grandchildren.

Convention on Biological Diversity

The Biodiversity Convention is an unprecedented effort by the nations of the world to take action now to deal with biodiversity loss before it is too late. The Convention does this by: (1) calling for domestic actions to conserve biodiversity; (2) encouraging the sustainable use of biodiversity; and (3) promoting benefit sharing.

The Convention seeks to achieve these objectives through a series of provisions. As an essential first step for national actions, the convention calls on all Parties to

adopt sound national conservation regimes, similar to those that the United States has long had in place. Nations are called on to establish national parks and protected areas, promote the recovery and rehabilitation of threatened species, and expand research and training, public education, and the use of environmental impact assessments. These provisions are enormously important for those nations that lack the conservation regimes they need to make progress in this area.

The Convention also recognizes that biodiversity can be used in perpetuity to benefit humankind. The second major objective of the Convention is thus to promote the sustainable use of biodiversity. By emphasizing measures to realize the economic and other benefits of biodiversity in a sustainable manner, the Convention encourages countries to conserve their biodiversity.

Third, because so much of the planet's biodiversity lies in the less developed countries, the Convention places great emphasis on the promotion of benefit sharing through international cooperation. The United States supports this concept, by which benefits stemming from the productive use of genetic resources flow back to those nations that act to conserve biological diversity and provide access to their genetic resources. These benefits—determined on the basis of voluntary agreements among all concerned—could take the form of monetary compensation for the use of genetic resources, or of technology transfer programs in training, participation in research, cooperative work programs, and improved access to information.

The benefit sharing provisions provide an important market-based incentive for countries, in particular poor countries, to protect their resources. Many developing countries are already entering into agreements with U.S. Government agencies and private sector companies to provide access to their genetic resources under a mutually agreed benefit sharing arrangement. Under one such arrangement the National Cancer Institute is studying a vine in Cameroon that contains a potentially promising anti-HIV agent; should this particular substance fulfill its initial promise, Cameroon would realize significant benefits from development of this resource.

The Convention also calls on Parties, in particular developed countries, to provide financial resources in support of convention provisions. The Global Environment Facility (GEF) acts as the interim institutional mechanism for both the biodiversity and climate change conventions. A substantial portion of GEF funding will be devoted to supporting the Biodiversity Convention.

Finally, the Biodiversity Convention creates a global forum for countries to share their experience and knowledge on the conservation and sustainable use of biodiversity. This will be an effective venue for implementing Convention provisions and maintaining a long-term focus on biodiversity issues.

U.S. Implementation of the Convention

The administration strongly supports the Convention on Biological Diversity as an important vehicle for the conservation and sustainable use of biodiversity worldwide. It sets in place a global commitment to promote biodiversity conservation and sustainable use for the benefit of this and future generations. U.S. adherence to the Convention is critical for global efforts to conserve and utilize biodiversity and for maintaining our position as the world leader in environmental protection.

As noted above, no implementing legislation will be required. The existing assemblage of Federal, State and private sector biodiversity programs—comprising numerous State and Federal laws and programs, an extensive system of Federal and State wildlife management areas, marine sanctuaries, parks and forests, and research and education programs—is considered sufficient in meeting our responsibilities under the convention. The administration does not intend to disrupt the existing balance of State and Federal authorities through this Convention and, indeed, is committed to expanding and strengthening these productive partnerships.

U.S. funding for convention-related activities will be handled through periodic contributions to the Global Environment Facility (GEF). The United States has committed to provide \$430 million over the next four fiscal years toward the replenishment of the recently restructured GEF; total pledges by all countries will come to slightly more than \$2 billion over the replenishment period. In order to make clear how the United States interprets key funding provisions of the convention, the administration has recommended several understandings to be deposited with our instrument of ratification; these understandings are discussed in detail in the annex to my testimony.

As you know, Mr. Chairman, industry has expressed concerns about the way some of the language in the Convention is drafted, particularly on the issues of intellectual property rights protection, terms of transfer of technology, and participation in U.S. research projects. We share those concerns, but feel we can best protect U.S. interests by: (1) sending clear messages to the rest of the world as to how the U.S. expects these provisions to be implemented by all Parties; (2) participating actively

in the Convention to protect U.S. intellectual property rights interests; and (3) depositing with our instrument of ratification statements of understanding on specific issues raised in articles of the convention.

Specifically, we propose to deposit with our instrument of ratification statements of U.S. understanding that make clear our positions on the issues of technology transfer and intellectual property rights, research, funding, sovereign immunity, and the Article 3 Principle. The content of these understandings is provided in detail in the Annex to this testimony.

On the critical issue of technology transfer, our understandings make clear that any access to and transfer of technology that occurs under the convention must recognize and be consistent with the adequate and effective protection of intellectual property rights (IPR). The U.S. understandings also make clear that the term "fair and most favorable terms" for technology transfer contained in Article 16(2) of the Convention means terms that are voluntarily agreed to by all Parties to the transaction. This lays down the clear marker to all other countries that the Convention cannot be used by any Party to unilaterally impose terms or obligations on any other Party regarding technology transfer. A Supplemental Statement on this from the United States Patent and Trademark Office is attached.

With respect to provisions addressing the conduct and location of research based on genetic resources, our understandings emphasize that the Convention cannot serve as a basis for any Party unilaterally to change the terms of existing agreements involving public or private U.S. entities. We further clarify which provisions of the Convention apply to research conducted by the U.S. Government and which apply to research by public or private entities.

Industry representatives have also inquired as to U.S. intentions regarding the negotiation of a biosafety protocol under the Convention. We stated at the time we signed the Convention that the need for a protocol must be demonstrated before further steps are considered. At the first intergovernmental meeting relating to the Convention we restated this position, adding that based on our experience, we did not feel that a biosafety protocol to this Convention is warranted. However, should negotiations on a protocol eventually proceed, we will be in a better position to protect U.S. interests if we have a seat at the table. And the United States, in cooperation with U.S. industry and other interested groups, would work to ensure that any protocol is scientifically based and analytically sound.

Finally, many have asked what mechanisms are available to the United States to ensure that any decisions of the Conference of the Parties (COP) accord with U.S. interests. First, we will ensure that the COP's rules of procedure, which will be adopted by consensus, are fully acceptable to the United States. Second, we have supported a proposal to require that all decisions concerning the financial mechanism are also made by consensus. Most importantly, however, the Conference of the Parties could not legally bind the United States to a legal interpretation of the Convention that the U.S. did not accept. The United States will have an opportunity to formally accept or reject any amendment or protocol to the Convention.

We believe the approach outlined above, which has broad support among both U.S. commercial and environmental groups, adequately addresses concerns raised by Convention provisions. It is worth noting that the debate over certain convention provisions opened the door to an unprecedented display of cooperation among U.S. industry and environmental organizations to forge a common understanding on the Convention. For example, one gathering of industry and environmental representatives, the so-called Group of Six, independently analyzed the Convention in painstaking detail and helped U.S. interest groups understand the Convention's implications. With an open ear to the concerns of all U.S. interests, the administration was able to establish a basis upon which it could sign the Convention and proceed with the ratification process.

Conclusion

Mr. Chairman, in closing let me reiterate that U.S. adherence to the Convention on Biological Diversity is of the utmost importance. In the Renaissance, philosophers spoke of a "chain of being," of which humanity was but one of an infinite series of links. Now we realize that nature is both too complicated and too fragile to be thought of as a chain; rather, it is a delicate web, which we can tear to pieces if we are not careful. Our commitment to the conservation of biodiversity is no more than our realization, at this late hour, that the web must remain unbroken.

Our task will not be easy. Recently, Time magazine ran a cover story on the precarious state of the tiger. The article described the efforts of many dedicated men and women around the world to preserve these magnificent creatures. We will not know for several years whether those efforts will be successful in ensuring that tigers exist outside a few zoos and circuses. But while we ponder the fate of this one

familiar species, consider this: in the short period since that issue of Time hit the newsstands, some scientists estimate that as many as one thousand species—unlamented, unstudied, their properties and potential vague unknown—may have vanished forever from the face of the Earth.

I believe that we owe it to this and future generations to participate as willing and constructive partners in what is an unprecedented global effort to save the world's biodiversity. Membership in the Convention on Biological Diversity provides a forum for us to shape the world's approach to biodiversity so that it is effective, pragmatic, scientifically based and successful. I urge your support for ratification of this important treaty and look forward to working with you in this effort to conserve and utilize the planet's biological wealth.

ANNEX I

THE STATEMENTS OF UNDERSTANDING AND THE RELATIONSHIP OF THE CONVENTION TO THE GATT TRIPS AGREEMENT

This Annex provides a further explanation of the statements of understanding to be included in the U.S. instrument of ratification and a discussion of the relationship of the Biodiversity Convention to the GATT Agreement on Trade-Related Aspects of Intellectual Property (GATT TRIPS).

THE STATEMENTS OF UNDERSTANDING

This administration developed the statements of understanding with an open ear to all concerns. The statements of understanding will not only guide our participation in the Convention, but also serve as notice to other Convention Parties as to how the United States interprets the Convention.

However, the statements of understanding are only one part of the overall approach with respect to the Convention. Thus, they cannot be read in isolation from the statements of Administration policies and other statements of interpretation set forth in the testimony, the President's Letter of Transmittal and the Report of the Secretary of State.

Technology Transfer.—The following understandings should be included in the United States instrument of ratification:

It is the understanding of the Government of the United States of America with respect to provisions addressing access to and transfer of technology that:

- a. "fair and most favorable terms" in Article 16(2) means terms that are voluntarily agreed to by all Parties to the transaction;
- b. with respect to technology subject to patents and other intellectual property rights, Parties must ensure that any access to or transfer of technology that occurs recognizes and is consistent with the adequate and effective protection of intellectual property rights, and that Article 16(5) does not alter this obligation.

It is the understanding of the Government of the United States of America with respect to provisions addressing the conduct and location of research based on genetic resources that:

- a. Article 15(6) applies only to scientific research conducted by a Party, while Article 19(1) addresses measures taken by Parties regarding scientific research conducted by either public or private entities.
- b. Article 19(1) cannot serve as a basis for any Party to unilaterally change the terms of existing agreements involving public or private U.S. entities.

Terms of Technology Transfer.—Article 16(2) states that access to and transfer of technology shall be provided and/or facilitated under "fair and most favorable terms," including on concessional and preferential terms where mutually agreed. "Fair and most favorable terms" are not defined in the Convention, and we do not purport to define them in this statement of understanding. However, we wish to make very clear that whatever their definition, no provision of the Convention regarding access to or transfer of technology can be used by any Party to unilaterally impose terms or obligations on any other Party regarding technology transfer.

This issue should be clarified in the United States instrument of ratification by a statement that with respect to provisions addressing access to and transfer of technology that "fair and most favorable terms" in Article 16(2) means terms that are voluntarily agreed to by all Parties to the transaction.

Protection of Intellectual Property Rights.—The extension of adequate and effective protection for intellectual property rights is an essential prerequisite to achieve-

ment of the Convention's objectives on conservation of biological diversity, sustainable use of biological resources, and benefit sharing. The Biodiversity Convention contains perhaps the most stringent obligation to protect intellectual property rights in an environmental agreement to date. Article 16(2) states that technology transfers involving technology subject to intellectual property rights must be handled in a way that is consistent with the adequate and effective protection of the intellectual property rights in the technology.

However, Article 16(5) provides that the Parties, recognizing that patents and other property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

We recognize that other countries may have a perspective on intellectual property rights inconsistent with that of the United States. Apart from the clear obligation in Article 16(2), we do not anticipate that the Biodiversity Convention alone will change that perspective. However, we do wish to make clear that the Convention does not provide a basis upon which other Parties can deny adequate and effective protection to technology subject to intellectual property rights. To preempt any such misapplication of Article 16(5) by any Party, it is essential to include in the United States instrument of ratification a statement reaffirming the obligation of Parties to ensure that access to or transfer of technology under the Convention is consistent with the adequate and effective protection of intellectual property rights and that Article 16(5) does not alter this obligation.

Participation in Biotechnological Research.—Finally, the statement of understanding addresses those provisions of the Convention that provide for participation by developing countries in research derived from the development of their genetic resources.

First, the statement of understanding clarifies which provisions of the Convention apply to research conducted by the U.S. Government and which provisions apply to research conducted by either public or private entities. The subject matters of Articles 15(6) and 19(1) are virtually identical, although the legal obligations of each vary slightly. Article 15(6) provides that each Party shall endeavor to develop and carry out scientific research based on genetic resources by other Parties with the full participation of, and where possible in the territory of, such Parties. Article 19(1) provides for the effective participation in biotechnology research activities by those Parties that provided the genetic resources for such research, where feasible in the territory of such Parties.

The understanding that Article 15(6) applies only to scientific research conducted by a Party, while Article 19(1) addresses measures taken by Parties regarding scientific research conducted by either public or private entities, should be included in the United States instrument of ratification.

Second, the understanding clarifies the scope of the Article 19(1). To implement Article 19(1) the Parties should take measures that promote the negotiation of agreements regarding research on genetic resources. Ultimately, however, it is up to the entity conducting the research to determine the circumstances under which it is appropriate to provide for the participation of developing countries and whether it is feasible for such research to be performed in the territory of the developing country.

These obligations apply prospectively. Accordingly, the United States wishes to make clear in its instrument of ratification that the Convention cannot be used by any developing country to change the terms of existing agreements for development of genetic resources by U.S. entities.

FUNDING

The Convention contains two articles on funding. Article 20 sets forth the undertakings of all Parties with respect to financial contributions; Article 21 establishes a financial mechanism. These provisions are largely modeled on those of the Climate Change Convention to which the Senate gave advice and consent in 1992.

The following statement of understanding should be included in the United States instrument of ratification:

It is the understanding of the Government of the United States of America that, with respect to Article 20(2), the financial resources provided by developed country Parties are to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures that fulfill the obligations of the Convention and to benefit from its provisions and that are agreed between a developing country Party and the institutional structure referred to in Article 21.

It is the understanding of the Government of the United States of America that, with respect to Article 21(1), the "authority" of the Conference of the Parties with respect to the financial mechanism relates to determining, for the purposes of the Convention, the policy, strategy, program priorities and eligibility criteria relating to the access to and utilization of such resources.

The Government of the United States of America understands that the decision to be taken by the Conference of the Parties under Article 21, Paragraph 1, concerns "the amount of resources needed" by the financial mechanism, and that nothing in Article 20 or 21 authorizes the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties to the institutional structure.

Agreement on Costs and Measures.—Among other things, Article 20 requires developed country Parties to provide new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures which fulfill the obligations of the Convention and to benefit from its provisions and which costs are agreed between a developing country Party and the institutional structure operating the financial mechanism.

To qualify for funding, the United States interprets the Convention to require that both the cost of a project and the project itself be agreed between the institutional structure and the developing country. To preempt an argument, albeit unlikely, that a developing country is entitled to funding once the cost of the project alone is agreed, the United States should state its understanding that the financial resources provided under Article 20 are to enable developing country Parties to meet the agreed full incremental costs of measures that are agreed between a developing country Party and the institutional structure referred to in Article 21.

The "Authority" of the Conference of Parties.—Article 21 of the Convention establishes a financial mechanism and provides for an institutional structure to which the operation of the mechanism will be entrusted. It also describes the relationship between the Conference of the Parties and the financial mechanism.

Article 21(1) provides that the mechanism shall function under the authority and guidance of, and be accountable to, the Conference of the Parties. In addition, it states that the Conference of the Parties shall determine the policy, strategy, program priorities and eligibility criteria relating to the access to and utilization of the financial resources.

In this context, the United States understands that the "authority" of the Conference of the Parties relates to determining policy, strategy, program priorities, and eligibility criteria. In other words, the Convention does not give the Conference of the Parties the authority to govern the GEF or make its project funding decisions. A statement to this effect should be included in the United States instrument of ratification.

Amount of Resources Needed.—Article 21(1) further provides that contributions to the financial mechanism shall be such as to take into account the need for predictability, adequacy and timely flow of funds in accordance with the amount of resources needed to be decided periodically by the Conference of the Parties. At the time of the adoption of the agreed text of the Convention, nineteen countries (including the United States) declared their understanding that the decision to be taken by the Conference of the Parties under Paragraph 1 refers to the "amount of resources needed" by the financial mechanism, not to the extent or nature and form of the contributions of the Parties.

The Administration therefore intends to reiterate this understanding in its instrument of ratification.

OTHER PROPOSED STATEMENTS OF UNDERSTANDING

The administration intends to make statements of understanding placing on the Article 3 principle and on sovereign immunity:

The Article 3 Principle.—The Convention states verbatim Principle 21 of the Stockholm Declaration from the 1972 United Nations Conference on the Human Environment. This principle recognizes the sovereign right of States to exploit their own resources pursuant to their own environmental policies and the concomitant responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

The administration understands that it references a principle that the Parties will bear in mind in their actions under the Convention. The following understanding should be included in the United States instrument of ratification:

The Government of the United States of America understands that Article 3 references a principle to be taken into account in the implementation of the Convention.

Sovereign Immunity.—Article 22(2) obligates the Parties to implement the Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea. During the negotiations, the United States proposed, in addition to Article 22(2) the inclusion of a sovereign immunity clause, i.e., that the Convention does not apply to military vessels or aircraft, but that each Party has an obligation to ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, so far as is reasonable and practicable, with the Convention.

In view of the reference in Paragraph 22(2) to the law of the sea and the recognition by many delegations during the negotiations that the United States proposal was a principle of customary international law and therefore superfluous, the United States withdrew its proposal. To reaffirm this understanding, the following statement should be included in the United States instrument of ratification:

The Government of the United States of America understands that although the provisions of this Convention do not apply to any warship, naval auxiliary, or other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service, each State shall ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, so far as is reasonable and practicable, with this Convention.

RELATIONSHIP OF THE BIODIVERSITY CONVENTION TO GATT TRIPS

The TRIPs agreement defines substantive, minimum intellectual property rights standards all GATT member countries will have to provide. The TRIPs agreement explicitly permits GATT members to provide more expansive protection than is outlined in the agreement. As such, the TRIPs agreement will function as a "floor" for substantive protection for intellectual property rights by GATT TRIPs Parties under the Biodiversity Convention.

It will significantly improve global standards for protecting intellectual property over current standards. For example, the TRIPs agreement requires parties to make product patent protection available for inventions in essentially all fields of technology. This means that patents will be available for many important biotechnology products, including new pharmaceuticals, genetically engineered micro-organisms, proteins and genetic constructs.

TRIPs will also restrict the ability of countries to license patent rights without the consent of the patent owner. And although TRIPs permits parties to exclude patent protection for new and useful plant and animal invention, GATT members will have to provide protection for new plant varieties. In this regard, we will stress the benefits to our trading partners of adopting standards consistent with the 1991 revision of International Convention for the Protection of New Varieties of Plants (the UPOV Convention). Finally, TRIPs provides a good basic model for ensuring protection of confidential business information and trade secrets.

The Biodiversity Convention and the TRIPs agreement are fully compatible in their goals, principles and in their obligations. Indeed, the conclusion of the TRIPs will serve to further strengthen the obligations in the Biodiversity Convention to provide adequate and effective protection of intellectual property rights.

SUPPLEMENTAL STATEMENT OF THE UNITED STATES PATENT AND TRADEMARK OFFICE ON THE CONVENTION ON BIOLOGICAL DIVERSITY

The administration believes improved protection of intellectual property will strengthen the economic incentives outlined in the Convention on Biological Diversity. Strong intellectual property systems facilitate research, development and commercialization of new technologies. Global consistency in such systems will facilitate international cooperation and technology transfer. We will work with the Secretariat of the Convention and with the Conference of Parties to promote the positive role of intellectual property systems in development and transfer of new technologies based on genetic resources.

The Convention on Biological Diversity will not require the United States to alter its domestic intellectual property systems. Our strong intellectual property systems have proven effective, not only in stimulating innovations based on genetic resources, but also in encouraging the investments necessary to develop and commer-

cialize products based on such innovations. Indeed, our status as world leader in the biotechnology industry is in part due to our effective domestic intellectual property systems.

We encourage other countries to rely on the Convention as an authority and as a impetus for improving their domestic intellectual property systems. In doing so, we note that the Convention specifically requires that transfers of proprietary technology are to be on terms that recognize and are consistent with the adequate and effective protection of intellectual property rights. No other provision in the Convention specifically addresses the characteristics of intellectual property protection.

Indeed, it would be counterproductive to the aims of this Convention if countries attempted to limit intellectual property protection, particularly for technologies based on biodiversity. Rather, by fully implementing their obligations under bilateral and multilateral treaties regarding intellectual property, countries will establish market conditions that will encourage sound and sustainable commercial development of biodiversity. In this regard, we believe the Convention is consistent with the obligations of the recently concluded Agreement on Trade-related Aspects of Intellectual Property of the Uruguay Round, as well as other treaties involving intellectual property to which the United States is a party.

Of course, there remains the possibility that some countries may attempt to interpret the Convention in a way that is inconsistent with basic concepts of intellectual property protection, particularly the right of exclusivity. Exclusivity permits an intellectual property owner during the period of protection to decide if and on what terms to license or sell the protected technology. Measures taken by such countries that would alter the full enjoyment of this right will invariably dilute the value and hence the beneficial incentives of intellectual property protection. Such measures, whether implemented in law or through practices related to the grant of access to genetic resources, will, in turn, sap the economic incentives for preserving biological diversity that the Convention strives to create.

In summary, we do not believe countries can legitimately rely on the Convention as authority to deny or restrict intellectual property protection for technologies based on genetic resources. Nor do we believe that countries can legitimately rely on the Convention's provisions to avoid obligations to improve their intellectual property systems imposed by other treaties, including the recently concluded Agreement on Trade Related Aspects of Intellectual Property of the Uruguay Round. We will continue to treat inadequate intellectual property protection for U.S. technology, including technology based on genetic resources, as an onerous and egregious burden on trade. And we will continue to rely on all available means to address deficiencies in foreign intellectual property systems that have negative economic effects for U.S. industry. As such, the Patent and Trademark Office supports the ratification of the Convention on Biological Diversity.

The CHAIRMAN. Thank you very much indeed. I will turn now to Senator Baucus and his statement, and then we will come to comments from my colleagues and questions.

STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM MONTANA

Senator BAUCUS. Thank you very much, Mr. Chairman. I apologize for not being here on time.

Mr. Chairman and members of the committee, I want to thank you for giving me the opportunity to appear before you this morning. As chairman of the Environment and Public Works Committee, which has the jurisdiction over the major statutes designed to serve biodiversity, I want to offer my very strong support for the Senate giving its advice and consent to United States ratification of the Convention on Biological Diversity.

The conservation of biological diversity is one of the most critical challenges facing the people of the world today. According to Harvard Prof. Edward O. Wilson in his wonder book, "The Diversity of Life," from the 1940's to the 1980's population densities of migratory songbirds in the mid-Atlantic United States dropped 50 percent due largely to deforestation in the West Indies, Mexico,

Central and South America. About 20 percent of the world's fresh water fish species are either extinct in a state of dangerous decline.

The Center for Plant Conservation has identified more than 200 plant species that are known to have become extinct in the United States, and another 680 species and subspecies are in danger of extinction by the year 2000.

Professor Wilson conservatively estimates that an astounding 27,000 species a year, 74 a day, 3 an hour are lost due to the destruction of the rainforests.

What do we lose when we lose biological diversity? We lose the potential for miraculous medicines like Taxol, derived from the bark the Pacific yew tree, which has proven to be the most effective treatment for ovarian cancer.

We lost the ability to protect our food crops from insects and blight. Just a couple of years ago scientists here crossbred domestic wheat with a natural variety found in Brazil to combat devastating leaf rust.

And we lose jobs. In the Pacific Northwest, commercial and recreational salmon fishing provided 60,000 and \$1 billion in personal income. Today, however, many of the salmon stocks in the region and the jobs that depend upon them are on the brink of collapse.

And we lose the opportunity to pass on to our children an irreplaceable legacy, a world rich in wildlife, plants, and the values they hold for us. It is little wonder that Professor Wilson testified before our committee more than a decade ago saying that the loss of biological diversity is, "The folly our descendants are least likely to forgive us."

For these reasons, I believe it is critical to the United States to join with other nations in the world in efforts to conserve biological diversity. Ratification of the convention by the United States is important symbolically. It is also important substantively.

Ratification of the Convention on Biological Diversity is important symbolically because the United States has long been the leader in global efforts to conserve biological diversity. The Convention on Trade in Endangered Species, CITES, is also known around the world as the Washington Convention because it was signed here in 1973.

Nearly a century ago, the United States signed a migratory bird treaty with Great Britain and Canada, and since then has entered into similar agreements with Mexico, Japan, and Russia.

The United States Fish and Wildlife Service is seen as a leader around the world for its wildlife conservation programs. And though it may sound somewhat jingoistic, the fact is that no effort to conserve global biological diversity can be truly effective without the participation of the United States.

Ratification of the convention by the United States is also important for substantive reasons. The convention has already been ratified as of March 23 by 53 nations. Parties to the convention are preparing to meet to develop the rules governing the implementation of the convention. The United States can only have a seat at the table and a say in the development of those rules by ratifying the convention.

Most importantly, the United States should ratify the convention because it takes the right approach. It is a comprehensive agree-

ment designed to conserve biological diversity, promote sustainable use of the components of biological diversity, and ensure the fair and equitable sharing of benefits arising out of the use of genetic resources.

I also note that the balanced approach taken by the convention has led Dr. Roy Vagelos, Chairman and Chief Executive Officer of Merck, the world's largest research intensive pharmaceutical company, to write to me and, I presume, other Senators supporting speedy ratification for the convention.

The President stated in his letter of transmittal that no additional legislation is necessary to implement the convention. As the chairman of the Environment and Public Works Committee I agree with the President.

The United States already has numerous Federal, State, and local laws and programs, including abundant public and private partnerships to conserve biological diversity. In addition, the United States has an extensive network of public and private lands dedicated in whole or in part to the conservation of biological diversity. By ratifying the convention, the United States will enhance its existing efforts to conserve biological diversity.

On conclusion, Mr. Chairman, I firmly support the Senate giving its advice and consent to the United States ratification. The consequences of failing to join in global efforts to conserve biological diversity are simply too great.

As Professor Wilson so eloquently put it, "A panda or a sequoia represents a magnitude of evolution that comes along only rarely. It takes a stroke of luck and a long period of probing, experimentation, and failure. Such a creation is part of deep history, and the planet does not have the means nor do we have the time to see it repeated."

Mr. Chairman, members of the committee, thank you for this opportunity to testify, and I urge the committee to take very speedy action.

[The prepared statement of Senator Baucus follows:]

PREPARED STATEMENT OF SENATOR MAX BAUCUS

As Chairman of the Environment and Public Works Committee, which has jurisdiction over the major statutes designed to conserve biodiversity, I want to offer my strong support for the Senate giving its advice and consent to the United States' ratification of the Convention on Biological Diversity.

The conservation of biological diversity is one of the most critical challenges facing the people of the world today. According to Harvard Professor Edward O. Wilson, in his wonderful book, *The Diversity of Life*:

- From the 1940's to the 1980's, population densities of migratory songbirds in the mid-Atlantic United States dropped 50 percent, due largely to deforestation in the West Indies, Mexico, and Central and South America.
- About 20 percent of the world's freshwater fish species are either extinct or in a state of dangerous decline.
- The Center for Plant Conservation has identified more than 200 plant species that are known to have become extinct in the United States and another 680 species and subspecies that are in danger of extinction by the year 2000.

Professor Wilson conservatively estimates that an astounding 27,000 species a year—74 a day, three an hour—are lost due to destruction of the rain forests.

What do we lose when we lose biological diversity?

- We lose the potential for miraculous medicines like taxol, derived from the bark of the Pacific yew tree, which has proven to be the most effective treatment for ovarian cancer.

- We lose the ability to protect our food crops from insects and blight. Just a couple of years ago, scientists here cross-bred domestic wheat with a natural variety found in Brazil to combat a devastating leaf rust.
- We lose jobs. In the Pacific Northwest, commercial and recreational salmon fishing have provided 60,000 jobs and \$1 billion in personal income annually to the region. Today, however, many of the salmon stocks in the region, and the jobs that depend on them, are on the brink of collapse.
- We lose the opportunity to pass on to our children an irreplaceable legacy, a world rich in wildlife and plants and the values they hold for us all. Little wonder that Professor Wilson testified before the Environment and Public Works Committee more than a decade ago that the loss of biological diversity is "the folly our descendants are least likely to forgive us."

For these reasons, I believe it is absolutely critical for the United States to join the other nations of the world in efforts to conserve biological diversity. Ratification of the Convention on Biological Diversity by the United States is important, symbolically and substantively, to those efforts.

Ratification of the Convention on Biological Diversity is important symbolically because the United States long has been the leader in global efforts to conserve biological diversity. The Convention on International Trade in Endangered Species (CITES) is known around the world as the Washington Convention, because it was signed here in 1973.

Nearly a century ago, the United States signed a Migratory Bird Treaty with Great Britain and Canada, and since then has entered into similar agreements with Mexico, Japan, and Russia. The U.S. Fish and Wildlife Service is seen as a leader around the world for its wildlife conservation programs. Though it may sound somewhat jingoistic, the fact is that no effort to conserve global biological diversity can be truly effective without the participation of the United States.

Ratification of the Convention on Biological Diversity by the United States is also important substantively. The Convention already has been ratified by 53 nations as of March 23, 1994. The parties to the Convention are preparing to meet to develop the rules governing implementation of the Convention. The United States can only have a seat at the table, and a say in the development of those rules, by ratifying the Convention.

Most importantly, the United States should ratify the Convention on Biological Diversity because it takes the right approach:

- It is a comprehensive agreement designed to conserve biological diversity, promote the sustainable use of the components of biological diversity, and ensure the fair and equitable sharing of benefits arising out of the use of genetic resources.
- It provides economic incentives for conserving biological diversity. Under the Convention, the benefits stemming from the use of genetic resources will accrue to those nations that conserve biological diversity and provide access to genetic resources. Moreover, intellectual property rights of businesses investing in the exploration of genetic resources will be protected under the Convention and by virtue of the Interpretative Statement accompanying the President's transmittal of the Convention to the Senate.

I note that the balanced approach taken by the Convention has led Dr. Roy Vagelos, Chairman and Chief Executive Officer of Merck & Co., the world's largest research intensive pharmaceutical company, to write me and, I presume, to other Senators, supporting speedy ratification of the Convention.

The President has stated in his Letter of Transmittal dated November 19, 1993 that no additional legislation is necessary to implement the Convention. As Chairman of the Environment and Public Works Committee, I agree with the President. The United States already has numerous federal, state, and local laws and programs, including abundant public and private partnerships, to conserve biological diversity.

In addition, the United States has an extensive network of public and private lands dedicated in whole or in part to the conservation of biological diversity. By ratifying the Convention, the United States will enhance its existing efforts to conserve biological diversity.

In conclusion, Mr. Chairman, I firmly support the Senate's giving its advice and consent to the United States' ratification of the Convention on Biological Diversity. The consequences of failing to join in global efforts to conserve biological diversity are simply too great. As Professor Wilson has so eloquently put it, "A panda or a sequoia represents a magnitude of evolution that comes along only rarely. It takes a stroke of luck and a long period of probing, experimentation, and failure. Such

a creation is part of deep history, and the planet does not have the means nor we the time to see it repeated."

The CHAIRMAN. Thank you very much. Am I correct in having heard you say that you believe no implementing legislation would be necessary?

Senator BAUCUS. That is correct, Mr. Chairman. We have lots of statutes already on the books.

The CHAIRMAN. Good. Thank you very much indeed. Now, you are excused, and I would just like to turn to Counselor Wirth and ask him what he thinks are the key steps that should be taken to make this treaty into a strong instrument. As we know, many treaties get passed more in form than in substance. Do you have any thoughts with regard to this treaty?

Mr. WIRTH. I think there are a number of steps that we are poised to take on this. First, we have to target the Convention on Biological Diversity, make that absolutely the first priority. We will be working in what Vice President Gore has spoken so eloquently and movingly about—a set of new partnerships between the developed and the developing world using a restructured global environmental facility to build new teams, build new capacity, build new awareness within the developing world about the importance of biodiversity and the capacity to save it. This team building becomes very, very important.

Related to that, of course, is the identification of where the richest areas are going to be. I think it is probably fair to say that we will be setting priorities through the biodiversity treaty.

Third, it is extremely important for us to embark upon an aggressive public education campaign to get people to understand the enormous import of this. Senator Baucus spoke about prospecting for biodiversity, it is a useful metaphor.

Think about our ancestors prospecting, say, in the American West or elsewhere for oil or minerals or whatever. Now we are going to be prospecting for the extraordinary wealth of biodiversity. And that is one way of having our publics both in the United States and around the world understand the importance of this and, therefore, the importance of conserving their patrimony, conserving that which they have inherited.

Fifth, I think that we will have already begun and will be able to accelerate an increased partnership with our own AID in terms of focusing resources within AID at a higher priority on biodiversity. There are a number of very significant opportunities that we can capture right away.

And finally, I would like to close with the huge potential that we have for economic cooperation, which is beginning to be realized in just the lead-up to the ratification of this treaty. I have had in my office on numerous occasions representatives of industry, of environmental groups, and of government all together working on the enormous promise of this.

And I think the ratification will, I hope, be a jump-off point to a very strong and aggressive new partnership that will enable the United States, with the most aggressive, promising, and capable industry in the world, to take even further advantage of this both for the well being of American citizens, American economic interests,

and American concerns, but also to put that effort behind the conservation of biodiversity.

So, we are poised, Mr. Chairman, to take a number of steps to focus the treaty, to restructure the GEF, to develop new partnerships, to work on our publics domestically and in foreign policy, to increase the efforts of AID, and to strengthen this new partnership with the private sector. So, we are ready to go, and we hope that will be launched right away with the ratification of this treaty.

The CHAIRMAN. As you know, there are different forms of conditions that can be included in a resolution of ratification. I think that reservations are prohibited under the treaty, but I believe there are understandings that the administration has requested.

Do you feel that understandings is the correct phrase to use here? How did we arrive at that particular word of art?

Mr. WIRTH. Well, an understanding as you know, Mr. Chairman, seeks to interpret a convention as opposed to a reservation, which seeks to modify its legal effect. This convention does not permit reservations, as you pointed out in your question.

We have used unilateral understandings to protect or advance U.S. positions in connection with other treaties, the Genocide Convention, the Covenant on Civil and Political Rights, and so on. We believe that at a minimum an understanding indicates an authoritative statement of the U.S. interpretation of a provision, puts other parties on notice of the U.S. position, and it stops them from later claiming that the U.S. interpretation is being put forward in bad faith.

So, we think that is a summary of our interpretation of the weight of our proposed understandings. We have seven of them related to this treaty, Mr. Chairman. And those will be submitted, we hope—if agreed to by the Senate those will be submitted with our notice of ratification.

The CHAIRMAN. Thank you. We will turn now to Senator Jeffords.

Senator JEFFORDS. Thank you very much, Mr. Chairman. I want to thank all of our witnesses for the very excellent statements.

I would like to express my support for ratification and anticipate that it will go forward. The United States has long been a leader in protecting its own biodiversity. This treaty gives us the opportunity to work with other nations, and transfer our knowledge about species preservation, whether it is through legislation, technology, or sustainable market development.

It has been proven over and over again that biological materials are vital to the development of biotechnical products such as medicines, and allows us to study and protect our food crops.

Let us send a message to the rest of the world that the United States is serious about biodiversity preservation.

Mr. Wirth and Mr. Pomerance, I want to commend the administrative also today for taking the recent efforts, as of yesterday, I believe, with respect to the CITES Treaty and with respect to Taiwan. I think the President took a bold step yesterday in declaring that wildlife trade sanctions be taken against Taiwan for its continued use and trade in rhino and tiger parts and products.

It is a clear signal that the United States and the administration are serious about commitment to international laws that protect endangered species. I hope the administration will continue to carefully monitor the situation regarding illegal trade in rhinos and tigers, and keep Congress informed.

I am pleased also to see that Taiwan at least has taken initial action to try and enforce the laws against the utilization of rhinoceros and tiger parts, and also hope that they will voluntarily come forward with attempts to try and preserve the species by foundations or funds, to assist in that regard.

Now, let me turn to Africa. A number of the countries have signed the Convention in Biodiversity, but all of these countries I believe are—or most of them, anyway, are seriously poor and I wonder whether or not they have the financial resources to do anything under the treaty to protect endangered species.

I wondered if you would comment on that, either Mr. Pomerance or Counselor Wirth as to what we can do? I know that you mentioned this somewhat in your statement, but I wish you would give me a little better of an idea of what we can do to help those countries to be able to move and provide the protection necessary under the Biodiversity Treaty.

Mr. WIRTH. Thank you very much, Senator Jeffords, and thank you for your kind comments about our actions related to endangered species. That is a beginning, as you know.

To go back to the question of tigers for a minute, we are deeply worried about tigers and the continued trade in tiger parts and in rhino horns, and will be monitoring not only the efforts being made in Taiwan but a number of other countries as well where we are also concerned about the potential of a spreading trade.

I would say that we look forward to working with the Government of India where we have had a lot of problems in the past, as you know, on issues of intellectual property rights, on various issues of national sovereignty, and we look forward to building with the Government of India a new set of partnerships and this would be one of those. There is great concern there about the preservation of tigers in India.

We also hope that we will be able to strengthen, as part of our emerging relationships with Russia, to aid and help with the Siberian tiger. It is a very tough issue, and we may luck out and be able to save the tiger in the wild, and it is going to demand some increased and aggressive activity on our part.

Going to your question about funding, as you know coming out of the deliberations in Rio was an agreement that the Global Environmental Facility be established. That was established initially, and we are now in the process of reforming that. There was a very good session in Beijing a few months ago in which there was significant discussion about how the Global Environmental Facility can be strengthened and be better coordinated.

We anticipate that the GEF will be the facility that funds the assistance to the developing world, the countries in Africa that you are talking about. We have just gone through a replenishment of the GEF, and we think that that is almost completed and the reforms are almost completed. That will total something in the neighborhood of \$2 billion plus over the next 4 years.

Of that amount, we anticipate that 40 to 50 percent will be going to efforts in the area of global climate change, to assist developing countries in their efforts to meet the targets they are setting for themselves, and that something in the neighborhood of 30 to 40 percent will be going to biodiversity. That is over the next 4 years.

We will relate very closely the Biodiversity Convention to the GEF. The reforms in the GEF should allow us to establish priorities that are consistent between the preservation of species under the Biodiversity Convention. And the goals and targeting under the GEF—the governing board of the GEF will be setting priorities and we will, of course, play a major role in GEF. And assuming that the Senate ratifies the treaty we will also be playing a major role in establishing priorities here as well.

There are some 135 AID projects as well that are focused on assistance in the area of biodiversity, and that relates to one of the priorities that I mentioned in response to Senator Pell's earlier question of what are we poised to do? We are poised to really increase the effort through AID as well.

The promise of this I cannot underestimate and understate the promise of this for the United States and for the world. This is a classic example of where we can do well by doing the right thing. And this is very good for our industry, it is good for the future of U.S. intellectual capacity and U.S. industries, but also has enormous promise for the rest of the world.

Senator JEFFORDS. Thank you for your excellent statement. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, indeed. We turn now to Senator Kerry, who has been a leader in this field of the environment.

Senator KERRY. Thank you, Mr. Chairman. I apologize for being late, and also, because I cannot stay for questioning because of a conflict.

But I did want to stay first of all to welcome Counselor Wirth, and also to thank him for his leadership and the administration for their leadership on this important environmental issue.

Counselor Wirth will well remember the disappointment and frustration that we felt in Rio when we attended as members of the Senate delegation at the unwillingness of the then Bush administration to work out and sign the agreement on biodiversity. While we felt there were some legitimate questions on technology transfer, and on the GEF and funding mechanisms, we also felt those could have been resolved, and certainly the preparatory process could have done that.

There are now 170 signatories, some 50 nations that have already ratified this biodiversity treaty before us for consideration. We were the Nation that really was one of those initiating the call for this convention, and now find ourselves slowly coming to the table.

Senator Baucus very eloquently articulated what is at stake here. But I think that we really need to emphasize that the Senate needs to ratify this as rapidly as possible because critical decisions, particularly article 16 and the full meaning of the intellectual property rights application, and also other important issues of the GEF

list and what countries are going to be designated and so forth, all remain to be decided at the conference.

If we are not at the table we not only do not have the opportunity to provide leadership, but things may happen or not happen, as the case may be, that are against our interest or against a larger interest that this convention represents.

So, I do have some questions that I think are important for the record, Mr. Chairman. I do think it is important for the record to clarify some of the article 3—why we are defining as we are and what it means in terms of the rights of nations to exploit resources, but balancing it with the interests that we are trying to achieve in this treaty, and also some questions about the GEF and intellectual property. I would like the record to reflect them. And if we could simply submit them in writing, I would like to do that.

I would like to congratulate you, counselor, for your attention to this and the administration's attention to it. The President made this his first pledge on Earth Day last year, that we would sign the biodiversity treaty and move forward on it. And I think you have proven that, by working with the environmental community, the pharmaceutical community, the biotechnology community and others, you can really bring the interested parties together.

This is a very critical issue. I just came from a meeting this morning with a significant number of our entrepreneurial business people at the American Business Conference which is here in Washington now. Many members of the administration will be talking to them, Senator Dole was speaking to them, among others.

They see the future for business as the development of less developed countries, and their ability to penetrate these new markets abroad with products, whether it is in software, health care, delivery services infrastructure development, telecommunications, and so forth. How we do that development is just critical beyond most people's measure.

You I know understand it. You have been an extraordinarily articulate spokesperson for these issues. But what is happening in New England today, where the Commerce Department has had to shut down the fisheries and our fishermen are dislocated is not unrelated to what is happening in the former Soviet Union, or in China or Latin America or any other country where developmental policies are just clashing with the ecosystems of each of those places and of all of our planet.

So, I think this is a treaty far more important, frankly, than today's hearing may suggest or that the attention given it may suggest. But the real measure of its importance will be determined in the conference of parties and in the future definitions. We must be there and we must be the leader.

So, I want to firmly state my support for moving forward on this, and congratulate you in your efforts in helping that to happen.

Mr. Chairman, I apologize for not being able to stay.

Mr. WIRTH. Senator Kerry, I bring personal thanks to you and Senator Jeffords from the Secretary, for whom this is a very high priority, and he knows how strongly the two of you have been supportive of this very, very important effort.

This is an absolutely bipartisan effort, and it is an absolutely joint effort by business, government, and the environmental groups

in quite a remarkable fashion. The coalitions that have been meeting around the table in my office and elsewhere have been very impressive, and reflective of the promise of this that everybody feels and understands.

I think we worked out the questions. You are quite right, Senator Kerry, that there was some great legitimacy in the questions that were raised 2 years ago about this. And the drafting was done at the end, very quickly, and it left some ambiguities.

We have, as I pointed out earlier, seven understandings which will be included with my testimony, one of those on the issue of the preamble and principles, which you asked about, and one on intellectual property rights, very important in the interpretation of section 16(2) and its relationship to 16(5).

There is one on participation in research—who participates and how does that participation work. There are three on the issues of financing, which Senator Jeffords was asking about. How do we do that? And one on sovereign immunity.

So, we have seven understandings that will be thoroughly explained in the annexes to my testimony, not only what the language of the understanding is but how we arrived at it, why it is there. And every one of these has been done in very close cooperation with the affected parties. We have, for example, in sovereign immunity statements from the Defense Department in support of the way we are approaching this.

There are strong statements that have been submitted that the chairman put in the record from industry supporting this partnership and our interpretations of intellectual property rights, and the participation in research, and we think that this has been done right, and we are ready to go.

Again, going back to the chairman's first question, as soon as this is ratified, this is a major sort of jumping off point, Mr. Chairman, and there is so much to be done. And this is, I think, as interesting and as promising an arena as we have in the United States for this magic cooperation between our economic and our environmental side. It is an opportunity that we are not going to see again perhaps in the time that we all deal with this.

We want to grab it now, and nurture it, and move it along, and your support and help is certainly instrumental in all of that. We thank you very much.

Senator KERRY. Well, I am delighted that you are shepherding it. Thank you.

The CHAIRMAN. We look forward to addressing you as Under Secretary before too long, though Counselor is a fine title.

Do you have any more questions?

Senator JEFFORDS. I just have one more. Actually, it is not a question, Mr. Chairman. I want to bring to your attention to the fact that John Porter in the House and I are working on the creation of a commission to oversee—not oversee, but rather to keep track of what goes on unsaid in the various treaties and to monitor what the United States is doing as well as the international community in order to ensure that we are aware of the progress or the lack thereof in these, and we will be introducing that soon. I would hope that you would take a look at it, and hopefully favorably support it. But I just wanted to make you aware of that today.

Mr. WIRTH. We appreciate that. Perhaps you and Congressman Porter and I might get together to talk about what follow-up measures are being taken. As you know, the Commission on Sustainable Development will be meeting again in New York, I believe in May. Mr. Topfer from Germany, their environmental minister, will be the new chairman of CSD. We have been talking to him about important followup measures.

There is an enormous amount to do and very limited resources, and we are going to have to be imaginative and creative. And, as Senator Baucus was pointing out earlier, exercise our leadership. It will not happen without us really pushing on it, and your efforts will be very welcome, I can assure you.

It might be useful for to all get together. We might do that.

Senator JEFFORDS. I think I would like doing that anyway. Thank you and thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much. Thank you for the eloquence of your presentation and the specificity of it, and also the listing of the seven understandings ad seriatim, which I think will help in studying the record.

Mr. WIRTH. Thank you, Mr. Chairman.

The CHAIRMAN. We now come to the public panel which consists of Dr. Georg Albers-Schonberg of Merck & Company, appearing on behalf of the Pharmaceutical Manufacturers Association; Ms. Lisa A. Conte, of Shaman Pharmaceuticals, South San Francisco, CA, on behalf of the Biotechnology Industry Organization; and Dr. Walter V. Reid of the World Resources Institute here in Washington, DC.

Would you come to the witness table, please? I think we will ask Dr. Albers-Schonberg to open up.

STATEMENT OF GEORG ALBERS-SCHONBERG, MERCK & CO., INC., WHITEHOUSE STATION, NJ, ON BEHALF OF THE PHARMACEUTICAL MANUFACTURERS ASSOCIATION

Dr. ALBERS-SCHONBERG. Good morning, Mr. Chairman, and members of the committee. I am very pleased to be here on behalf of Merck and on behalf of the Pharmaceutical Manufacturers Association to support the Senate's ratification of the Convention of the Biodiversity Treaty.

Merck has a very strong scientific interest in the convention.

The CHAIRMAN. Maybe you could hold the mike a little closer to you.

Dr. ALBERS-SCHONBERG. Merck has a very strong scientific interest in the convention because of a long-standing effort in the area of so-called natural products for medicine. During my tenure at Merck was have five times succeeded with a major discovery.

I want to mention only one of them Ivermectin, which is an incredibly safe and effective drug for the treatment of a human tropical disease, river blindness. It has been called the most important chemotherapeutic of the century for tropical medicine.

The convention that underscores the rich potential to advance human health and well-being through preservation of biologically diverse environments has certainly our full support.

But the convention is equally about acquiring resources and technologies that are needed to succeed in the modern world. A principal way to support conservation, particularly where economic and

population pressures threaten it, is to create economic incentives for it.

Developing countries must obtain financial investments and know how from the industrialized world. But without adequate intellectual property protection, this will prove to be very difficult if not an almost impossible task, and if that happens that can threaten the very success of the treaty.

Intellectual property protection is for no industry more fundamentally important for innovative research than for the pharmaceutical industry. For example, out of every 10,000 pure synthetic compounds, only 1 will prove safe for effective human use. A child entering first grade would graduate from high school in the time it takes to complete all the research to ensure benefit for the patient. Only 3 out of every 10 products, that reach the market, actually recoup their R&D costs. There is tremendous risk involved in this work.

The risk is even multiplied when one searches for natural product medicines in extracts of plants and microorganisms as we are doing in our work. Only extremely rare natural products such as penicillin or Ivermectin, which I mentioned, are ready-to-use or almost ready-to-use medicines. The vast majority of compounds that we discover must be improved by modifying their chemical structures. You have to increase potency. You have to eliminate side effects, et cetera, et cetera.

Our five successes over the last 30 years proved to be of the very rare type. Hundreds of other compounds are purified, because initially they look interesting enough, and have their structures determined. Many are given every chance, using the full arsenal of pharmaceutical know-how and technologies, even including computerized molecular modeling of protein target structures, and still in the end they do not make the grade.

Therefore, again, without adequate and effective patent protection there is no way one would start down the long and risky road of innovation.

As you know, Mr. Chairman, both the U.S. Government and particularly the pharmaceutical and biotechnologies were concerned that interpretations of certain key sections of the treaty would actually weaken the protection of intellectual property rights which the convention promises.

To address these concerns, Merck has assembled a small group of six organizations, two of which are here today. With the encouragement of the Vice President's staff this group has developed statements that would serve as the basis for the U.S. interpretation of key provisions of the convention, and also had drafted a policy statement to accompany the interpretive language.

At the same time, the Pharmaceutical Manufacturers Association achieved industry-wide consensus on ratification with appropriate commitments from the administration that it will vigorously defend intellectual property rights within the terms of the convention.

Both our working group and the PMA are reassured by the language of the President's message of transmittal to you.

What is Merck looking for? Our standard in terms of the type of investment activity the convention should encourage and protect is our agreement with Costa Rica's Institute for Biodiversity, INBio.

This agreement predates the conference at Rio by almost a year and anticipates key features of the convention.

Briefly, INBio is a nonprofit scientific organization created on the recommendation of the Costa Rican Government, whose mission is to maintain that country's biodiversity.

I just want to mention the three most important features of this agreement. I believe that you have it in a handout and it is up here on the board.

First: we signed a \$1 million 2-year contract with INBio for the right to screen a specific number of samples from the Costa Rican conservation areas. \$1 million go to INBio; in return, samples come to us for screening, and hopefully finding a product. 10 percent of this original sum goes to the country's Ministry of Natural Resources and is invested directly in conservation.

If Merck develops a marketable product from one of the samples, 50 percent of the royalties will also go the ministry. The other 50 percent is reinvested in the nonprofit work of the institute.

Second: the project emphasizes employment and education of local people in the purposes and techniques of conservation. Under other circumstances, these people, who live around the conservation areas would exert pressure on the environment by looking for new agricultural lands.

And third: technology transfer. Several INBio researchers have traveled to New Jersey to work alongside our scientists in our laboratories. Merck has provided an additional \$180,000 worth of laboratory equipment to modernize the INBio facility, and our scientists have spent extensive periods of time at INBio helping to install the equipment, giving instructions on how to use it, and so on.

I believe the long-term benefits of this joint project to Costa Rica encourages the preservation of ecologies that might otherwise be destroyed for economic reasons.

To summarize, Mr. Chairman, biodiversity is fundamental to future growth and development of the world community. We strongly support ratification of the convention on these principles. We would urge the Senate to seek concrete assurance from the administration that the President's message of transmittal to this body will be enforced.

One last point. Final assurance of intellectual property rights protection probably cannot be guaranteed in a global treaty. That requires the patient building of mutual trust. We have learned that in our negotiations with INBio. But we believe the Biodiversity Convention, with proper protections for innovation, will enable that dialog toward trust to go forward.

Thank you very much. Again, it was a great opportunity to be here. I am looking forward to your questions.

[The prepared statement of Dr. Albers-Schonberg follows:]

PREPARED STATEMENT OF DR. GEORG ALBERS-SCHONBERG

Good morning Mr. Chairman and members of the Committee. My name is Georg Albers-Schonberg. I am pleased to be here this morning on behalf of Merck & Co., Inc., the world's largest research-intensive pharmaceutical products company, and the Pharmaceutical Manufacturers Association, to support the Senate's ratification of the Convention on Biological Diversity.

BIODIVERSITY AND NATURAL PRODUCT RESEARCH

Mr. Chairman, I have spent my entire career in science at Merck, devoted to a search for new medicines in Nature. The Biodiversity Convention clearly underscores the rich potential to further human health and well being through such research. An abbreviated history of nature's yields to pharmaceuticals might be valuable background to the Committee at this point in your deliberations.

Prior to World War II, almost all of the world's medicines came from plants. Plants yielded treatments for anti-inflammatory, analgesic, antitumor, central-nervous system or cardiovascular conditions. Quinine against malaria, digitalis glycosides for the control of heart failure and reserpine for the treatment of schizophrenia are examples. Many of these medicines evolved from folklore which gradually changed into science. Aspirin is a chemical improvement of the biological properties of a folk medicine, a component of the bark of the willow tree that had been a traditional anti-inflammatory remedy.

Microorganisms also have proven a rich resource for science in the search for disease treatments, particularly for anti-infective drugs. Around 1940 penicillin and streptomycin, the first natural antibiotics, brought under control two great scourges of the ages: syphilis and tuberculosis. Other antibiotics followed, including tetracycline's, erythromycin, the cephalosporins and thienamycin.

MERCK'S SUCCESSES FROM NATURE

Merck has a long-standing, active and successful interest in so-called natural products because of this potential for the discovery of exceptional new medicines. During my tenure, five of our discoveries have led to marketed products. Two of these were good, solid medicines; three have been breakthrough drugs, representing a really significant medical advance.

- One was an antibiotic with higher potency against a broader range of bacteria than any known antibiotic. It often is the remedy of last resort and saves countless lives.

- Ivermectin is a veterinary anti-parasitic drug that also is an incredibly effective and safe anti-parasitic preventive of the human tropical disease, River Blindness. This drug has been called the most important chemotherapeutic of the century for tropical medicine.

I would emphasize the significance of potential natural product advances against tropical diseases, Mr. Chairman, because about 20 percent of the human species—over one billion people—are affected with tropical parasitic diseases. About 30 percent of the 80 million individuals at risk of River Blindness are infected. There are 250 million people with elephantiasis; 160 million incapacitated with malaria; 100 million aching and unable to work because of constant diarrhea. What a tremendous loss of human productivity and the ability to develop a modern economy!

- Finally, among our natural products is Mevacor, the first of the highly effective and safe modern cholesterol lowering drugs.

Each of these drugs were developed from organisms in the temperate zones of the developed world. They clearly demonstrate the role of biodiversity for medicine and presage the potential for breakthroughs in biologically more diverse, undeveloped or extreme environments.

RISKS, REWARDS AND PROTECTIONS

The Rio Convention is about conservation of biological diversity and its sustainable use. It is equally about acquiring the resources and technologies that are needed to succeed in the modern world. A principal way to support the conservation of biological diversity, particularly in countries where economic and population pressures threaten such conservation, is to create economic incentives for preservation.

The Merck-INBio agreement, which I will describe in some detail in a moment, is a risky investment and scientific collaboration by Merck supporting a young Costa Rican organization that is dedicated to establishing sustainable use of the country's genetic resources. Developing countries must understand that the industrialized nations can help precisely because they have patents, because they have intellectual property rights, because they have institutions that protect these rights. Absent these protections, the incentives for risk are removed.

Mr. Chairman, for no industry is intellectual property protection more fundamental to innovative research than the pharmaceutical industry. Pharmaceutical research and development is expensive and difficult under any circumstances and requires a commitment to sustained, long term risk.

First, the odds of getting a compound to market are tremendous: about 10,000 to 1. This means that for every 10,000 substances examined by private pharmaceutical

firms, only one will prove safe and effective enough to be marketed for human use. The discovery of a natural product drug requires the testing of hundreds of thousands of plants and micro-organisms, and even this may yield nothing.

Second is the time factor. A child entering first grade could graduate from high school in the average time—10 to 12 years—it takes to complete all the necessary, careful and costly research required to ensure that the product will benefit patients.

Third, market success is concentrated in a small number of prescription products. Only 3 out of every 10 products actually recoup their research and development costs. Highly successful breakthrough products must earn a return that permits them to "carry more than their own weight;" they must recoup their own R&D costs; cover the costs of those that don't; and fill the financial hole left by all the R&D failures. Obviously, these odds leave no room for indecision in investment—we must constantly strive for winners.

Fourth, a research gulf once spanned may have to be traversed again and again. Antibiotics are a good example of this point. Continuing R&D in the area of antibiotics is absolutely essential since the capacity of bacteria to mutate and develop resistance is outstripping the ability of research to invent new therapies. The best and most frightening example: today's strain of tuberculosis.

Finally, for all of our sophisticated equipment and education, we often must conduct our studies somewhat in the dark. This is because the urgency to find a prevention or treatment for certain diseases demands that we begin research before we have a full understanding of the disease itself. Our understanding of Alzheimer's, for example, is still very incomplete and the virus that is believed to be the cause of AIDS has evaded us again and again through its ability to mutate rapidly.

Working with natural samples multiplies all of these risks for several reasons, Mr. Chairman. Only extremely rare natural products—such as Penicillin or Ivermectin—are virtually ready-to-use medicines. The vast majority of compounds that a biological screen detects in plants or microorganisms, must be improved: potency may have to be increased a hundred or a thousand fold, side effects may have to be eliminated, etc. Merck's five successful discoveries over the last 30 years proved to be of the rare type. Hundreds of others were purified ten or twenty thousand fold, had their structures determined, and were given every chance using the full arsenal of pharmaceutical know-how and technologies—X-ray crystallographic protein structures, computerized molecular modeling, synthetic chemistry—and still didn't make the grade.

Intense industrial competition—an everyday fact of life in the developed world—is magnified to extremes in the pharmaceutical industry by reasons of risk. Adequate and effective intellectual property rights, particularly patents, are critical stimulants for creativity and inventiveness. They give the inventor rights to his invention, while challenging competitors by allowing improvements outside the scope of the patent before its expiration.

INTELLECTUAL PROPERTY AND THE BIODIVERSITY CONVENTION

Mr. Chairman, the Biodiversity Convention before you, as with any international agreement, leaves key provisions open to alternative interpretations. Both the U.S. government and U.S. industry—particularly the pharmaceutical and biotechnology industries—were concerned that interpretations would weaken the Convention's protection of intellectual property rights. This was the chief concern, as you well know, that prevented this nation's signature in Rio.

To address these concerns, Merck worked to construct a small group of six organizations, bringing together corporate and NGO perspectives. Two members of this group are represented here on this panel—World Resources Institute and Shaman Pharmaceuticals. The other members were the World Wildlife Fund, Genentech, Inc. and the Environmental and Energy Study Institute.

With the encouragement of then Vice President-elect Gore's staff, we examined in detail primarily the issues pertaining to intellectual property rights and technology transfer, which we felt were the major U.S. concerns. We dealt with other key issues as well, but in less depth, and did not attempt to cover every possible interpretative issue that the U.S. might have with the treaty. Specifically, we did not assess problems, if any, under Article 22 on the Convention's relationship to other international agreements, nor Article 27 on dispute resolution. We concluded from our review that the U.S. could sign the Convention while protecting intellectual property rights—with appropriate interpretative language.

Our working group developed a statement that could serve as the basis for a U.S. interpretation of key provisions of the Convention, and a draft policy statement to accompany the statement that further details policy on key issues, especially the protection of intellectual property rights and technology transfer.

The Pharmaceutical Manufacturers Association was working simultaneously—and successfully—to achieve industry consensus on ratification with appropriate commitments from the Administration that it will vigorously defend intellectual property rights within the terms of the Convention.

Should the Senate ratify the Convention, the United States will have several opportunities to emphasize the link between intellectual property rights and the goals of biodiversity conservation and sustainable development. The Convention establishes numerous committees, working groups, task forces and Conference of the Parties—all of which offer opportunities for the U.S. to make clear its position on the necessity of adequate and effective protection of intellectual property. Without question, we benefit more from being a player in this process than remaining on the sidelines.

A CASE EXAMPLE; THE MERCK/INBIO AGREEMENT

Mr. Chairman, I know that you have some personal knowledge of Merck's agreement with Costa Rica's Institute for Biodiversity (INBio)—you were with us in Rio at the reception where the world toppled on end! I wanted to briefly outline for the Committee the terms of this agreement, since it is represented as the international case model for resources conservation and technology transfer.

INBio is a non-profit, scientific organization created in 1989 on the recommendation of the Costa Rican government. INBio's mission is to maintain Costa Rica's biodiversity, estimated to be 5 percent of the world's total, by demonstrating the socioeconomic benefits of preservation.

In September 1991, Merck signed a \$1 million, two-year contract with INBio for the right to screen a specified number of plant, insect and environmental samples from the Costa Rican conservation areas and to evaluate these samples for pharmaceutical, veterinary and agricultural applications for a defined period of time. The number of samples that we would receive is a very small fraction of Costa Rica's biodiversity and the time allowed for evaluation is very limited before all rights to the samples revert to Costa Rica. There is nothing that prevents the Institute from entering into other collaborations simultaneously for different samples.

The Merck agreement helps INBio accomplish its goals in several ways. First, 10 percent of the \$1 million paid INBio under our contract goes to the country's Ministry of Natural Resources. If, after 10 or 15 years of screening and development, Merck emerges with a marketable product, 50 percent of the royalties we have agreed to pay INBio also will go to the Ministry. These dollars justify preservation of rain forests and other conservation areas that might otherwise be destroyed for economic gains through agriculture, for example.

There are other key aspects of the INBio integrated approach to sustainable development that are worth mentioning here. For instance, the project includes employment and education of local people who under other circumstances would exert pressure on the environment by looking for new agricultural land. INBio involves them in taking an inventory of the species in the forest and collecting samples for its customers, including Merck. Technology transfer, which in itself promotes long-term development opportunities and economic self-sufficiency, is another component of the agreement. Several INBio researchers traveled to New Jersey to work along side our scientists as we undertook the screening process and Merck provided more than \$180,000 of laboratory equipment to help modernize the INBio facility. It is my understanding that a number of other PMA member companies have similar types of agreements with entities in developing countries.

A pharmaceutical research budget must be allocated to fixed costs, enormously expensive clinical trials, basic research into the nature of diseases and the development of already advanced product candidates. Only a small proportion is available for the speculative and risky programs that are essential for innovation. Natural product screening, as represented in our collaboration with INBIO, is but one of these high risk program. But while we alone cannot save the world's biodiversity through contractual agreements—even with the prospect for royalties in the future—there is no question that the industry can be part of the solution.

CONCLUSION

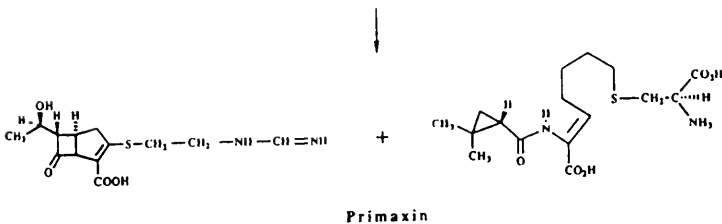
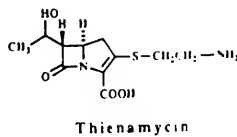
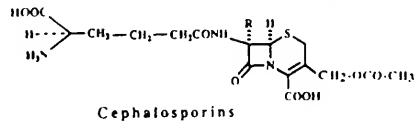
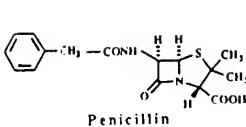
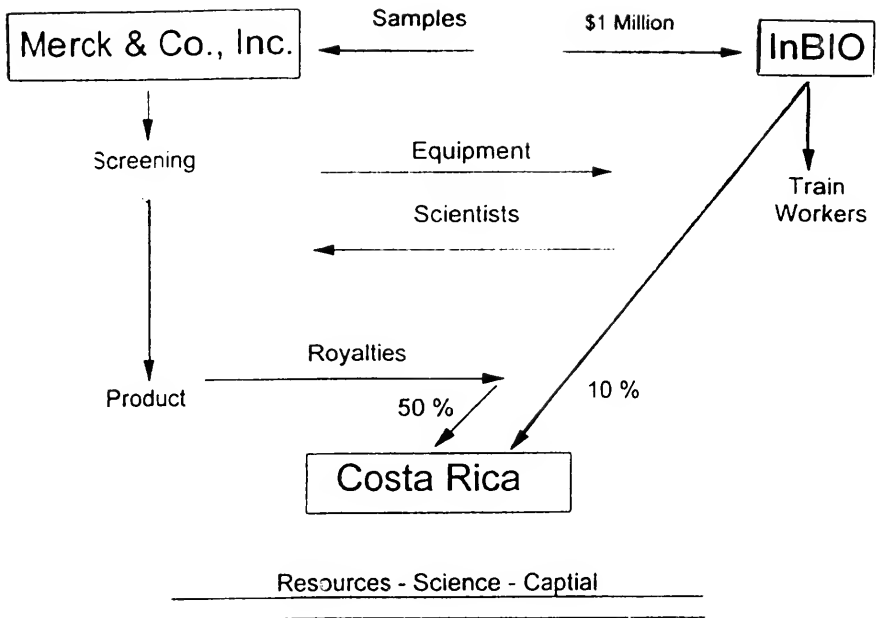
Mr. Chairman, biodiversity is fundamental to future growth and development of the world community, as demonstrated in the real and potential value of the Merck/INBio agreement to the people of Costa Rica. We support ratification of the Convention on these principles.

But we would also urge that the Senate seek concrete assurances from the Administration that the President's message of transmittal to this body be enforced. Specifically, President Clinton wrote that:

"The Administration will * * * strongly resist any actions taken by Parties to the Convention that lead to inadequate levels of protection of intellectual property rights, and will continue to pursue a vigorous policy with respect to the adequate and effective protection of intellectual property rights in negotiations on bilateral and multilateral trade agreements."

Perhaps final assurance of intellectual property rights protection cannot be guaranteed in a global treaty. It requires the patient building of mutual trust, as Merck learned in reaching consensus on a contract with INBio. But we believe the Biodiversity Convention enables the dialogue toward trust to proceed.

Again, I have welcomed the opportunity to appear before the Committee and look forward to any questions that you might have.



The CHAIRMAN. Thank you. Now we turn to Ms. Conte.

**STATEMENT OF LISA A. CONTE, SHAMAN PHARMACEUTICALS,
SOUTH SAN FRANCISCO, CA, ON BEHALF OF THE BIO-
TECHNOLOGY INDUSTRY ORGANIZATION**

Ms. CONTE. Thank you very much, Chairman Pell, for the opportunity to testify today. My name is Lisa Conte. I am founder, President, and CEO of Shaman Pharmaceuticals, and I am here today on behalf of Shaman as well as the Biotechnology Industry Organization, which represents over 500 biotechnology companies in both the health care and agricultural fields.

I am also here today to strongly urge U.S. ratification of the Convention on Biological Diversity.

I would like to start with a short description of Shaman Pharmaceuticals. Shaman is a young company. We are just a little over 5 years old. We do all drug discovery from plants used traditionally in tropical areas. So, what we are doing is starting with the knowledge of the medicine man to come up with a more efficient route of drug discovery as compared with the random, mass-screening paradigms that are used by the major pharmaceutical firms.

We have been fairly successful to date. In our first 2 years of operations we moved two products all the way from discovery concept to human clinical trials, all the way from the forest to humans. Each one of those products is extracted from raw plant material in a sustainable manner from seven different countries throughout South and Latin America.

Also, with the first day that the company was founded we established a nonprofit arm called the Healing Forest Conservancy, which is based here in Washington, DC, and it is devoted to maintaining global biocultural diversity, and it is also a mechanism through which we return benefits to all the countries, all the communities and all the cultures with which we work around the world.

There are four major objectives of the Convention on Biodiversity which I would like to speak about today—inventory, conservation, sustainability, and reciprocity.

Obviously, in the long-term these are vital to the planet, they are vital to mankind, they are vital to all the creatures on the Earth. But I would like to bring this closer to home and talk about these four objectives specifically with respect to day-to-day operations at Shaman Pharmaceuticals.

Shaman works exclusively in tropical areas of the world, and we have a diagram up here which represents all the countries that we work with, and then the second diagram illustrates many of the cultures that we work with throughout South America. [Chart.]

Ms. CONTE. These areas contain over 50 percent of the Earth's flora, less than 1 percent of which have been investigated even crudely for medicinal purposes. As we heard several times today, from Professor Wilson, one estimate is that we could lose 20 percent of these species over the next 25 years. This is not only a loss of the chemical diversity in this material and the potential applications of this chemical diversity, but also thousands of years of traditional indigenous knowledge as to how best to use that chemical diversity.

One mechanism for preventing this and conserving these species and conserving this knowledge is through linking their preservation to economic incentives, and Shaman has done that in the pharmaceutical industry. We have now created an over \$1 million plant supply industry which supports our discovery and development efforts. And when our products are approved, this will become a multimillion dollar supply industry owned by indigenous people, owned by forest dwelling people, that provides an economic alternative to the destruction of the rainforest around them.

Shaman allocates a portion of its research funds for research into how best to sustainably harvest this plant material, and we monitor the collection so that they are all done in a sustainable manner.

The final point I would like to talk about is reciprocity. We are not the Shaman bank. We are not even a revenue producing company on one hand. And on the other hand, it can be 10 years or more before you reap the rewards of a drug discovery process.

Shaman has come up with what we feel is a very unique three prong approach which can provide immediate benefits necessary to the gene-rich countries, also recognize their right to value from their own genetic resources, yet work within the constraints of a small company.

Shaman is not in the position, as Merck, where we could donate \$1 million up front to a particular organization or a particular company with the number of areas that we work in.

In the short term, what we do is allocate a portion of our research budget, allocate a portion of our expedition budget for immediate benefits. And in this case, we work with the cultures and communities, and we find out what is important to them. Sometimes it is technology transfer, and we provide that, but oftentimes it is not. So, we just listen to what is important to them.

In the medium-term we do establish supply industries that are owned by forest dwelling people, and I already talked about the economic incentives associated with that. And in the long-term, we have committed to put a portion of our profits into the Healing Forest Conservancy, our nonprofit, and then through that back to all the countries, all the communities, all the cultures with which we work regardless of where the product from which that product came from derived.

What that does is it allows areas that involved in biological prospecting to diversify their risk of being in that business, and have a much greater probability of receiving some benefit from that activity.

In conclusion, speaking for myself, as CEO of Shaman, I think that one of the most valuable attributes of the convention, of the treaty is its flexibility. Implementation ultimately comes down to negotiations and agreements on a consenting basis between two parties, usually representing the north and the south.

The Convention in Biological Diversity has a great deal of momentum. It has support from all different corners of the Earth. It has great cooperation now between the north and the south. The U.S. can have the greatest influence by ratifying the treaty and participating in the conference of parties, and participating in the development of rules and procedures.

Success of the four objectives I mentioned—inventory, conservation, sustainability, and reciprocity—are crucial not only to the long-term survival of Shaman Pharmaceuticals, but any company or industry which depends upon biological resources.

Thank you very much for the opportunity to testify today, and I am happy to answer any questions.

[The prepared statement of Ms. Conte and additional material follow:]

PREPARED STATEMENT OF LISA CONTE

Good Morning Mr. Chairman, and members of the Committee. My name is Lisa Conte, and I thank you for the opportunity to testify today on behalf of the Biotechnology Industry Organization and Shaman Pharmaceuticals, Inc., of which I am the founder, President, and Chief Executive Officer. Shaman is a \$100 million natural products pharmaceutical company located in South San Francisco, CA, that has generated over 100 high-skill, high-wage jobs from bench scientists to lab technicians since its incorporation in 1989.

Today I testify in strong support of the U.S. ratification of the Convention on Biological Diversity, just as I pledged my support publicly in 1992 despite the U.S. position to not sign the Convention. Please let me tell you why.

Shaman is a natural products pharmaceutical company and depends on chemicals found in tropical plants as the raw material for drug discovery. In fact, twenty-five percent of the prescription drugs in the U.S. are derived from natural products extracted from plants, and many of today's most valuable pharmaceuticals have plant origins. For example, quinine, which is used to fight malaria; vinblastine, used to treat certain cancers; and pilocarpine for glaucoma were developed from tropical plant extracts. In addition, well-known drugs such as aspirin, ephedrine, digitalis, and taxol originated from plants.

The company's research efforts target specific plants found in species-rich tropical forests that house over half of our planet's estimated 500,000 plant species. By integrating the sciences of ethnobotany (the study of how indigenous, or native, peoples use plants), medicine and plant natural products chemistry, Shaman has been able to achieve time and cost savings in active compound identification and preclinical development of our initial products. We focus our screening process on specific plants for specific indications. This enables the company to effectively discover active compounds without incurring the significant costs associated with mass screening processes typically utilized by major pharmaceutical companies.

Today, however, the accelerating rate of the destruction of the tropical forests, where most biological species have evolved, threatens the wealth and health of the biological diversity of our planet. If current rates of the loss of tropical forest habitats continue, present and future generations will lose 20% of all living species by the year 2020, according to the Harvard Professor E.O. Wilson. Since the genetic diversity within species is the raw material for drug discovery, the erosion of biological diversity is a serious problem for natural products pharmaceutical companies like Shaman.

For several reason, I am convinced that the only process to preserve the biological wealth from tropical countries that Shaman uses for drug discovery is through the Convention on Biological Diversity.

1. Of the 165 countries that have signed the Convention, Shaman has working partnerships in 30 countries. Article 15, regarding access to genetic resources, will facilitate future access of companies like Shaman to economically valuable genetic resources in signatory countries under international law.

2. Article 6 will strengthen biodiversity conservation in the species-rich developing world through the creation of national plans and programs for the conservation and sustainable use of biodiversity in signatory nations.

3. Inventory and monitoring of biodiversity through Article 7 offers more complete information on components of biodiversity and enhances successful management decisions for its conservation. By monitoring the status of various species that are threatened, a rapid decline in a population can be detected at an early stage and lower cost actions can be taken before a species becomes endangered.

4. Speedy ratification of the Convention by the Senate will allow U.S. participation in the up-coming initial international discussions on biodiversity where the interests of companies like Shaman can be raised.

The Convention is critical to Shaman's operations and philosophy, because it defines not only biodiversity conservation, but also the sustainable use of biodiversity and of the equitable sharing of benefits that arise out of that use. As the name of my company implies, Shaman Pharmaceuticals integrates the ancient knowledge of indigenous peoples use of medicinal plants with the modern technology of the pharmaceutical industry to create a more timely and less costly method for drug discovery. This unique method focuses on the isolation of active compounds from tropical plants that have a history of medicinal use in indigenous societies and has enjoyed an unprecedented success rate. Since we began operations in May, 1990, Shaman has screened 471 plants, 290 of which showed enough activity to warrant further study. Two products were moved into clinical trials in record time. The first, Provir, is in Phase II trials. Provir is a therapeutic for viral respiratory infections, diseases which afflict 20 to 40 percent of the population each year, worldwide. Our second product, Virend, is also in Phase II studies, and is being developed as a treatment for recurrent herpes infections, a disease afflicting more than one-eighth of the population.

Since its incorporation, Shaman's philosophy and procedures have been to equitably compensate indigenous societies for their intellectual contributions to the identification of useful products in the drug discovery process. Consequently, Shaman founded the Healing Forest Conservancy, a non-profit organization to funnel a percentage of the profits from commercialized products to countries and communities that have participated in Shaman's drug discovery process. Shaman has provided specific up-front compensation projects that respond to immediate needs of our country and community counterparts as well.

Now for the first time in international law, Article 8 of the Convention make explicit that " * * * each party is required, subject to its national legislation, to take measures relating to the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biodiversity and to promote their wider application, with the approval and involvement of the holders of such knowledge, innovations and practices."

Article 8 provides a means for gene-rich but cash poor countries and indigenous communities to gain economic benefits from their biotic resources and therefore supplies pragmatic incentives for them to conserve their biotic wealth. Since the fragile environments where most indigenous communities live are also habitats where most of the remaining unique flora and fauna of our biosphere are located, economic benefits from the wealth of biotic species, and indigenous knowledge of medicinal use, will accrue to the countries and communities of origin.

Article 8 also has initiated new forms of partnerships between industrialized and developing countries. For example, Shaman has joined an International Cooperative Biodiversity Group (ICBG) with the U.S. National Institutes of Health, the National Institute of Mental Health, the National Science Foundation and the U.S. Agency for International Development in recognition of the need to address the interdependent issues of biodiversity conservation and drug discovery to improve human health in tropical countries. Shaman and the ICBG will work with the governments and research institutes of Nigeria and Cameroon to investigate plant based therapeutics for Third World diseases such as malaria, schistosomiasis and leishmaniasis.

Mr. Chairman, I am also testifying today on behalf of BIO, the international trade organization which represents the emerging biotechnology industry in the United States and around the globe. As the leading voice for the biotechnology industry, BIO represents over 500 companies of all sizes engaged in the development of products and services in the areas of agriculture, biomedicine, diagnostic, food, energy and environmental applications.

In April 1993, the Industrial Biotechnology Association (IBA) and the Association of Biotechnology Companies (ABC) [which later merged to become the Biotechnology Industry Organization (BIO)] wrote to President Clinton urging him to sign the Convention on Biological Diversity. In doing so, we noted our concerns about the need for strong and effective protection of intellectual property. We also called for a declaration of understanding that nothing in the Treaty should be taken to presume the necessity of a protocol on the procedures for the safe transfer, handling and use of living modified organisms resulting from biotechnology.

In a September 8, 1993 letter to Vice President Gore, we reiterated our concern about these issues and called for an interpretive statement to accompany ratification in order to protect the interests of the United States biotechnology, pharmaceutical, seed and other industries.

We were very pleased that in his November 19, 1993 letter of transmittal to the Senate, the President stated forthrightly that "the administration will therefore strongly resist any action taken by Parties to the Convention that leads to inad-

equate levels of protection of intellectual property rights and will continue to pursue a vigorous policy with respect to the adequate and effective protection of intellectual property rights in negotiations on bilateral and multilateral trade agreements." The President also put on the record that the report of the Department of State which accompanied his letter provides a detailed statement of the Administration's position on the provisions of the Convention which relate to intellectual property rights.

Turning to the State Department's November 16, 1993 Letter of Submittal to the President, (hereinafter referred to as the report) the question of compulsory licensing of intellectual property is effectively addressed by this statement: "voluntarily entered into contractual agreements on the use of genetic resources will provide the most effective vehicle for this flow of benefits." Intellectual property includes proprietary technology and industry was seeking assurance that transfer of such proprietary technology only proceed with the voluntary participation of its owner. The Administration has made clear that it agrees and will so interpret the Convention. Furthermore, Article 16 of the Convention deals specifically with access to and transfer of technology. Under this article, Parties to the Treaty are obligated to facilitate access and transfer of technologies to other Parties which are relevant to the Conservation of Biological Diversity and to do so under "fair and most favorable terms." Here the State Department declares that the United States will interpret "fair and most favorable" to mean terms that are voluntarily agreed to by all Parties to the transaction. We applaud this definition.

The language of Article 16(5) of the Convention was particularly troublesome to us because while it recognizes that patents and other intellectual property rights may have an influence on the implementation of the Convention, it calls upon contracting Parties to cooperate to ensure that such rights are "supportive of and do not run counter to" the objectives of the Convention. Addressing this point directly, the State Department report sets forth the understanding of the United States that nothing in Article 16(5) alters the obligations of the Parties to ensure that any access to, or transfer of, technology that occurs under the agreement recognizes and is consistent with the adequate and effective protection of intellectual property rights. It states further that "to be considered adequate and effective a country's intellectual property system must make protection available for all fields of technology and provide effective procedures for enforcing rights". We believe that this is a straightforward, unequivocal, statement of the U.S. position which should not be subject to misunderstanding. We take assurance from it.

On the question of biosafety, the State Department report says the United States does not believe that a protocol on biosafety under this Convention is warranted. It sets forth that should consideration of such a protocol proceed, the U.S. will work in close cooperation with the U.S. biotechnology industry to ensure that any biosafety regime which is produced under the Convention is "scientifically based and analytically sound." Again we commend the administration for addressing this point head on. We take further comfort from the fact that under Article 29 of Convention, any protocol adopted must be ratified by each Party before it becomes binding upon them.

Article 19(1) of the Convention calls upon each contracting Party to take measures to provide for participation in biotechnology research activities by the developing countries which provide the genetic resources. The State Department report says with respect to research conducted by the U.S. public or private entities, the U.S. understands they have the authority to determine whether it is feasible to have developing country participation and whether such research can be performed in the territory of the developing country. We feel that agreements regarding research and genetic resources should be negotiated by the Parties and be voluntarily acceptable both to the country providing the genetic resource and to the entity conducting the research activities.

We note further interpretation by the State Department of the language of article 19(1) which states categorically the understanding of the U.S. Government that this article "cannot serve as a basis by any Party to unilaterally change the terms of existing agreements involving public or private U.S. entities." For us, this means that any retroactive application of the terms of the Biodiversity Treaty would not be acceptable to the United States and this is a position which the biotechnology industry strongly supports.

In conclusion, I believe that the Convention on Biological Diversity gets to the very heart of what Shaman Pharmaceuticals is all about, and I respectfully urge the Committee to advise for ratification of the Convention in as speedy a manner as possible. Both the biotechnology industry and my company strongly believe that the Convention must be ratified quickly, since the longer we wait, the more species we may lose. The time frame is urgent, because the genetic material in each species

in unique, and to lose just one species is to deny present and future generations the opportunity to use its genetic material to improve the quality of life.

LETTER TO SENATOR PELL FROM CARL B. FELDBAUM, PRESIDENT, BIOTECHNOLOGY
INDUSTRY ORGANIZATION

March 9, 1994.

The Hon. CLAIBORNE PELL,
United States Senate,
Washington, DC. 20515

Re: Convention on Biological Diversity

DEAR SENATOR PELL: In his letter of November 19, 1993, transmitting the Convention on Biological Diversity to the Senate, President Clinton specifically noted that adequate and effective protection of intellectual property rights is an important economic incentive which not only encourages the development of innovative technologies, but which improves all parties' ability to conserve and sustainably use biological resources. To this we add that the conservation and preservation of biological materials is an important societal goal. These resources are necessary to sustain our biosphere and offer tremendous opportunities for the development of new products to address human and animal health, nutrition, and other societal needs for us and future generations.

The biotechnology industry believes that the key element of a fair and balanced Biodiversity Convention is a recognition of the value of the products of nature, as well as the contributions made by persons and institutions who modify those products into useful articles of commerce. The value of biological materials is enhanced when intellectual property rights are created, protected and enforced by all nations. Without adequate and effective intellectual property protection there will be less incentive to make contributions to developing nations whose territory encompasses much of the world's biological material.

The Biodiversity Convention as written is an admirable set of policy goals which have at their core the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. Unfortunately, we feel these enumerated goals may be difficult to reach because the technology transfer provisions of the treaty are vague and subject to undesirable interpretations. We believe that the submission of an interpretive statement by the United States with the instruments of ratification is an important step towards ensuring that the Treaty is implemented in a manner that furthers the mutual interest of all nations which have become signatory. The additional submission by the Administration of its views on the Treaty to the Senate further clarifies how the United States will implement the Treaty.

From the point of view of the biotechnology industry there are two important questions which remain to be answered by the Senate during the hearing process. We submit that for the United States interpretive statement to have real world significance, it must be accompanied by an expressed willingness to withdraw from the convention in the event the contracting parties reach interpretations on the issues of intellectual property or governance which are counter to the national interests of the United States. While we recognize that the Convention already sets forth in its text the withdraw option, what is missing from the Administration's submission is a set of conditions under which that right would be exercised. Intellectual property is the very life blood of biotechnology and like other intellectual property reliant industries we need to be assured that the United States will withdraw from the convention if:

- It is interpreted in a manner fundamentally inconsistent with the minimum level of intellectual property protection contained in the recent GATT round (this means the standards and not the transition rules attached thereto); or
- It is used to deprive any United States persons of a recognized legal right to property.

We urge the Senate to obtain a second assurance, i.e., that the United States will not seek, and will in fact oppose, the development of a biosafety protocol under the convention. We believe that creation of any such entity would not result in scientific oversight to further ensure human safety, but rather in promotion of a political agenda serving a purpose other than science. Furthermore we believe the Administration should publicly commit to:

- The inclusion of broadly representative industry participation in any and all international negotiations;

- Insistence on a factual, science based approach to regulation as the essence of any national regulatory scheme for biotechnology processes and products; and
- A clear statement that national laws regulating biotechnology should be based on the products and not merely on the fact that the process of biotechnology was used in their development or creation.

BIO is trade association representing more than 500 companies, academic institutions, state biotechnology centers and other organizations involved in the research and development of health care, agricultural and environmental biotechnology products. We respectfully submit these comments on behalf of our membership and want to indicate our willingness to appear as a witness at any future scheduled hearing.

Very truly yours,

CARL B. FELDBAUM,
President.

The CHAIRMAN. Thank you very much, Ms. Conte. We now turn to Dr. Reid and then may ask a question or two. Dr. Reid.

STATEMENT OF WALTER V. REID, WORLD RESOURCES INSTITUTE, WASHINGTON, DC

Dr. REID. Mr. Chairman, thank you for inviting me to testify today, and I would also ask that my full statement be included in the record of this hearing.

The CHAIRMAN. Without objection.

Dr. REID. My name is Walter Reid. I am a biologist and Vice President of World Resources Institute, a policy research organization promoting environmentally sound development.

This convention is a cornerstone of the global response to the biodiversity crisis. It is in the United States interest and in the global interest that we ratify the convention and do so swiftly. Quick ratification will encourage other nations to take the steps it calls for to conserve their biodiversity. It will ensure our full involvement in procedural decisions to be taken by the conference of parties. And it will ensure that U.S. industry is not left out—and thereby shut out—of the new framework that will govern trade in genetic resources.

I would like to emphasize three points from my written testimony about why we should ratify the convention. Mr. Chairman, I am holding here a specimen of the vine that Tim Wirth referred to, *Antirocladus korupensis*. This plant is a new species found in Cameroon in 1987, and it contains a chemical, michellamine B, active against the AIDS virus. This drug is now in preclinical trials.

Two other plants, one from Australia, one from Indonesia, are also the source of drugs active against the HIV virus that are also in preclinical trials. And as you may now, the drug Taxol, derived from the Pacific yew tree, is the most promising cancer drug discovered in the last 15 years.

These drugs represent just a tiny fraction of the economic benefits we obtain from the world's species, genes, and ecosystems. Economic benefits from wild species make up some 4.5 percent of the U.S. GDP, estimated in the 1980's at about \$87 billion annually.

So, my first point is simply that biodiversity is valuable. It is not only of intrinsic value, it also contributes directly to our health and economic needs today, and promises to be of even greater value for future generations.

My second point is that these resources are disappearing at a rate unprecedented in human history. It is extraordinarily difficult to convey the urgency of this problem. It does not make the head-

lines and we rarely observe the actual event of extinction, but it is truly a crisis. Some 2 to 5 percent of species are being committed to extinction each decade. This means one species of bird, mammal, or plant each day.

My third point is that this convention can significantly slow the loss of this biodiversity. The commitments made by parties to conserve and sustainably use biodiversity within their countries, and this is the core of the agreement, will significantly reduce threats to biological diversity, particularly in developing countries.

The convention also increases the economic incentive for nations to conserve biodiversity, and it will help focus international activities and guide limited resources to the highest priorities.

I will conclude with five recommendations for steps the United States can take to help ensure the convention's successful implementation. First, the U.S. should keep any understandings that we decide to include with our instrument of ratification to a very minimum. They will send negative signals to other nations, implying that the U.S. is renegotiating the agreement or is not committed to its objectives.

In particular, the proposed understanding of article 3, the principle, for example, is at best redundant and seems even to apply a narrowing of international common law, while the proposed understanding of article 22 on sovereign immunity seems to carve out an unnecessarily broad exception to the treaty.

Second, the United States should quickly give shape to the convention through its leadership and actions. In particular, the U.S. needs to demonstrate how it plans to meet its obligation to facilitate the transfer of technologies. This should not be difficult. We already have various training programs, collaborative research projects, and development assistance activities that could provide the basis for meeting these obligations.

Third, the U.S. should support quick establishment of the clearinghouse for scientific and technical cooperation called for under article 18.

Fourth, the U.S. should be open to consideration of a protocol on biosafety. Many countries do have legitimate concerns about the safe transfer, handling, and use of biological materials. Effective policy must respond to these public concerns as well as to technical data. The U.S. should take steps to address these concerns, not reject the protocol out of hand.

Fifth, the U.S. should seek to develop regional agreements or protocols under the convention because of the importance to us of conserving shared ecosystems and species. The Western Hemisphere Summit in Miami in December of this year could provide an excellent setting for moving such regional approaches forward.

This convention is a pivotal element of the international response to the crisis of species extinction. This crisis represents a tragic loss of resources that are of great value to humanity today, and could provide even greater benefits in the future.

The convention is sound and the Senate should give its swift consent to ratification. The U.S. should then move quickly to demonstrate how the convention can be implemented in a constructive and efficient manner.

Thank you again for inviting me to testify.

[The prepared statement of Dr. Reid follows:]

PREPARED STATEMENT OF DR. WALTER V. REID

Mr. Chairman and members of the Committee, thank you for this opportunity to testify on the proposed U.S. ratification of the Convention on Biological Diversity. My name is Walter Reid; I am Vice President for Program at the World Resources Institute (WRI). WRI is a private, non-profit, policy research and capacity-building organization seeking to promote environmentally sound development.

I am a biological scientist, with a Ph.D. in Zoology. I have studied the population and community ecology of birds, mammals, and fish in the U.S. and in Latin America; surveyed endangered species populations; and published extensively on the scientific aspects of biodiversity conservation, rates of extinction, potential impacts of climate change on biodiversity, and indicators of the status of biodiversity.

For the past six years, my work at WRI has focused on the design of national and international policies to respond to the crisis of the accelerating loss of biodiversity around the world. In particular, from 1988 to 1992, WRI along with the World Conservation Union (IUCN), the United Nations Environment Programme (UNEP), and over 40 governmental and non-governmental organizations around the world, developed the *Global Biodiversity Strategy*. This Strategy is now being used in many nations as a framework for local, national, and international action to maintain the diversity of life, study it for its value and role in ecological processes, and use it sustainably to meet human needs. Among other actions, the Strategy called for an international convention on biodiversity, and featured that recommendation as one of five "catalytic" actions necessary to stimulate a cascade of other actions by the private sector and governments.¹ During the past two years, I have worked on the design of policies for sustainable trade in genetic resources, and I have co-edited a book (*Biodiversity Prospecting*) on this topic.

The Convention on Biological Diversity is a cornerstone of the global response to the problems of species extinction and the loss of biological diversity. It will play a significant and catalytic role in slowing the loss of species, genes, and habitats around the world. The convention provides a framework within which scientific and technical information, government policies, and market economic forces can be brought to bear to meet the needs of conservation and to address the root causes of the loss of biodiversity. At a national level, the Convention will stimulate countries to undertake critical conservation initiatives. Internationally, the Convention calls for actions that largely parallel steps already being taken by corporations, development assistance agencies, and governments to protect biodiversity and ensure its sustainable use. The Convention represents an important milestone and sets the stage for more rapid and focused international action to stem the loss of biodiversity, particularly within developing countries.

It is both in the U.S. interest and in the global interest that the U.S. ratify this Convention, and do so swiftly. U.S. ratification will underscore the importance of the agreement, and signal the commitment of this nation to its objectives. It will stimulate nations to take the steps they need to conserve their biodiversity. Quick ratification will ensure that the U.S. is involved in the important decisions about procedures that will be taken by the Conference of Parties, and it will enable the U.S. to help set the course of the implementation of the Convention. And, ratification will ensure that U.S. industry is not left out—and thereby shut out—of the new framework that will govern trade in genetic resources.

In my remarks today, I will summarize the scientific basis for the concern about the loss of biological diversity, review the importance of this Convention in addressing this problem, and conclude with several observations about the steps the U.S. could take to maximize the effectiveness of the agreement.

STATUS AND IMPORTANCE OF BIOLOGICAL DIVERSITY

Humanity is confronting two tragedies with regards to the planet's diversity of genes, species, and ecosystems, and both seriously undermine prospects for human well-being in coming decades. One is an information crisis—we have only scratched the surface of understanding of our biological resources and the benefits they might provide to humanity. The other tragedy is the extinction crisis—we are losing those resources at a rate unprecedented in human history.

¹Although not formally part of the negotiation of the Convention on Biological Diversity, drafts of the *Global Biodiversity Strategy* were used by negotiators from a number of countries and the final draft was formally tabled by the UNEP Executive Director at the November 1991 negotiating session.

An Information Crisis.—Our lack of knowledge of biological diversity is simply astonishing when we consider how important these resources already are to us and how important they promise to be in the future. The water we drink, the air we breathe, our fertile soils, and our productive seas, lakes, and rivers are all products of healthy biological systems. The diversity of wild species also contributes enormous direct economic benefits to our economy and to the world economy.

Economic benefits from wild species make up an estimated 4.5 percent of the Gross Domestic Product of the U.S.—amounting to more than \$87 billion annually—and contributing to such sectors as pharmaceuticals, agriculture, forestry, fisheries, and the chemical industry.² All of the major crops grown in the U.S. originated in other countries, and all depend on infusions of new genes from those countries.³ The genetic diversity used in plant breeding has accounted for about half of the gains in agricultural yields in the United States from 1930 to 1980, amounting to some \$1 billion in annual additions to the value of U.S. agricultural output.⁴ Conversely, loss of genetic diversity places agricultural productivity at risk. In 1970, U.S. farmers lost \$1 billion to a disease that swept through uniformly susceptible corn varieties. Similarly, the citrus canker outbreak in Florida in 1984 also stemmed from a reduction in genetic diversity.⁵

Healthy and biologically diverse ecosystems also underlie our fisheries and forestry production. In the early 1980s, it was estimated that fisheries contributed some \$6.5 billion annually to the Gross Domestic Product of the U.S., and since that time per capita consumption of fish and shellfish has increased by nearly 36 percent.⁶ The U.S. is also the world's largest producer of forest products, accounting for some 25 percent of the world roundwood production. And biological diversity is one focus of the growing "ecotourism" industry. Worldwide, nature tourism generates some \$12 billion in revenues annually.⁷

In the pharmaceutical industry, some 25 percent of all U.S. drugs are derived from plants alone. And, over 3000 antibiotics—including penicillin and tetracycline—are derived from microorganisms. Cyclosporin, developed from a soil fungus, revolutionized heart and kidney transplant surgery by suppressing the immune reaction. Aspirin and many other drugs that are now synthesized were first discovered in the wild. Recent advances in biotechnology have enhanced pharmaceutical companies' interest in these "natural products." These searches are paying off. Taxol—derived from the Pacific yew tree—is the most promising cancer drug discovered in the past 15 years. And three of the most promising chemicals for combating the AIDS virus are derived from plants (from Cameroon, Australia, and Indonesia).

Biological diversity is the key resource underlying one of our most promising new economic sectors—biotechnology. Growth in the biotechnology industry—including uses in pharmaceuticals, agriculture, and industrial applications—is already substantial. Total product sales for the U.S. biotechnology industry in 1991 totaled \$4 billion and by the year 2000 sales are expected to have grown more than 10-fold to some \$50 billion.⁸

Yet despite the importance of these biological resources, scientists have identified at most only one-tenth of Earth's species. Currently, about 1.4 million species have been described out of an estimated total of at least 10 million and conceivably more than 100 million species. In fact, we don't know even to an order of magnitude how many species exist. Worldwide, the gaps even in the professional capacity to identify and describe species are astounding. For example, the U.S. National Research Council has estimated that at least 7,500 new systematists specializing in tropical organisms are urgently needed to provide the basic information on biodiversity necessary for wise decisionmaking. With this poor information base, it should come as no surprise that scientists are repeatedly surprised by new discoveries. Each year about 3 new species of birds are discovered, in 1990 a new species of monkey was discovered near a large city in Brazil, and a new species of whale was discovered in 1989.

The science of ecology has just begun to explore the complex interrelationships among the Earth's millions of species. In many cases, therefore, it is difficult to predict the precise impact of a specific extinction. What we do know, however, is that human life ultimately depends on this complex web of life. From this perspective, conserving biodiversity is nothing more than a sensible precautionary measure.

² Prescott-Allen and Prescott-Allen, 1986.

³ Reid and Miller, 1989.

⁴ OTA, 1987.

⁵ Plucknett et al., 1987.

⁶ Prescott-Allen and Prescott-Allen, 1986. WRI, 1994.

⁷ WRI, 1992.

⁸ IBA, 1992.

The Extinction Crisis.—The second tragedy is the crisis of species extinction, degradation of ecosystems, and loss of genetic diversity of our crops, livestock, timber, and fish. Although we are a long way from fully understanding either the extent or value of Earth's biological resources, we can be quite sure that these resources are disappearing quickly. Biological diversity is being eroded as fast today as at any time since the dinosaurs died out some 65 million years ago.⁹ The crucible of extinction is in tropical forests, which contain more than half of all species on Earth, in just 7 percent of its land area. About 38 million acres of tropical forests—an area larger than the size of New York state—are being cleared annually.¹⁰

Scientists can judge the impact of this forest loss on the survival of species because of the relationship between the number of species that can exist in a given habitat and the size of that habitat. One clear conclusion of ecological science is that a significant reduction in a habitat's area will eventually lead to a reduction in the number of species surviving in the habitat that remains. This "species/area relationship" thus allows calculations to be made of the impact of habitat loss on species survival.

Our own studies at WRI and the work of many other scientists has concluded that at the current rate of tropical forest loss, some 2-5 percent of tropical forest species will die out each decade or be reduced to such small populations that extinction is a foregone conclusion.¹¹ Based on our best estimates of the number of species in existence, this means that about 1 species of bird, mammal, or plant will be committed to extinction each day and of course many times more insects and invertebrates will be lost as well. Even these estimates may be too conservative since they deal only with the outright loss of forest and do not account for such other threats as climate change, pollution, or forest fragmentation, any of which may drive the extinction rate higher still. These estimates of future species extinctions are bolstered by knowledge of past extinction. We know of more than 700 species worldwide that have gone extinct in the last 400 years.¹² Incomplete though this list is, it probably represents only the tip of the iceberg of what will come in future decades.

Tropical forests are not the only regions experiencing significant losses of biological diversity. More than ten percent of species in regions with what is known as "Mediterranean" climates, like California, South Africa, central Chile, and South-west Australia are endangered, and oceanic islands face even greater threats. Marine ecosystems continue to be degraded and coastal species placed at risk of extinction. Freshwater species are particularly threatened. For example, all the native fishes in the Valley of Mexico are already extinct. And species are not all that are being lost. Biodiversity encompasses the genetic diversity among species and the diversity of habitats and ecosystems within which they live and this genetic and habitat diversity is imperiled as well. In Bangladesh, only 6 percent of the original vegetation remains. Ninety-eight percent of the tropical dry forest along Central America's Pacific coast has disappeared. We have also lost considerable genetic diversity that was found among the local varieties, or "landraces" of agricultural crops as new varieties have been introduced. In Indonesia, for example, 1500 local rice varieties have become extinct in the last 15 years.¹³ We face challenges in the U.S. as well, with more than 800 threatened and endangered species and many habitats reduced to small fractions of their original extent.

The diversity of genes, species, and ecosystems is the foundation of sustainable development and the context of all human culture. Sustainable development has been defined as "development that meets the needs and aspirations of the present without comprising the ability of future generations to meet their own needs" and was accepted as a goal by more than 160 nations including the U.S. at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. The President has appointed a Commission on Sustainable Development to help this nation chart a path toward that objective. The biodiversity we have inherited from past generations provides our renewable natural resources, maintains the productivity of those resources, provides significant direct economic benefits, supports numerous and largely unquantifiable non-consumptive benefits, and furnishes options for future generations. We diminish these biological resources at our own peril and at tremendous cost to our children and to future generations.

⁹ Reid, 1992; Ehrlich and Wilson, 1991; WCMC, 1992.

¹⁰ WRI, 1994.

¹¹ Reid, 1992; Ehrlich and Wilson, 1991; WCMC, 1992.

¹² WCMC, 1992.

¹³ WRI, 1992; Reid and Miller, 1989; WCMC, 1992.

IMPORTANCE OF THE CONVENTION ON BIOLOGICAL DIVERSITY

What role will the Biodiversity Convention play in responding to these problems and promoting the sustainable use of biological resources? The Convention is a "framework" agreement, meaning that it establishes an international legal structure for a coordinated response to the loss of biological diversity. It establishes general obligations for the parties to the Convention rather than legally binding targets for specific actions. But even as a framework agreement, it will have an important impact on biodiversity conservation in three major respects:

First, Parties to the Convention accept a set of commitments for conservation and sustainable use of biodiversity within their countries. These conservation commitments are the core of the Biodiversity Convention, although they have received the least publicity. The central commitments are the following:

- To develop national strategies for conserving biodiversity;
- To inventory and monitor biodiversity;
- To establish a system of protected areas;
- To establish seedbanks or gene banks to protect both wild and domesticated species diversity;
- To integrate biodiversity conservation and the sustainable use of biological resources into national decision-making and to adopt incentives for the conservation of biodiversity;
- To develop assessment procedures (like the U.S. environmental impact statement process) to ensure that impacts on biodiversity are taken into account in project design;
- To promote public education related to biodiversity; and,
- To expand the technical capacity within the country to support conservation.

Implementation of these activities could significantly reduce threats to biological diversity over a relatively short time period, particularly in developing countries where coordinated policies to protect species and habitats typically do not yet exist and where laws to conserve biodiversity are still relatively weak, undeveloped, or unenforced. Moreover, these commitments provide a sound framework not only for conserving our biological heritage but also for ensuring that these resources, when used, are used sustainably. Each Party to the convention will carry out these commitments "as far as possible and as appropriate," and for many countries additional resources will be needed to help them achieve these goals. Nevertheless, the effect of these conservation provisions is already being seen. Signatories of the convention including Canada, Chile, Norway, Indonesia, Netherlands, Poland, and the United Kingdom have already begun to develop the required biodiversity strategies detailing how they will meet obligations to identify, monitor, and conserve biodiversity and identifying their priorities for training, education, and capacity-building. The U.S. has general authorizing legislation and programs established for the great majority of these commitments, and is now well-positioned to develop a comprehensive and integrated strategy for implementing the Convention.

Second, the Convention increases the economic incentive for conserving biological diversity. International agreements prior to the Biodiversity Convention held that the world's genes and species were the "common heritage of mankind."¹⁴ Although the objective of these agreements was to ensure widespread availability of genetic resources for agriculture and industry, there was one major flaw: countries supplying genetic resources for use in agriculture or industry received no direct economic benefit from their use and thus had less incentive to conserve the resource than might otherwise be the case.

The Biodiversity Convention corrects this problem by establishing that countries have sovereign control over these resources and can develop a market for the sale and trade of genetic resources. This enables benefits stemming from the use of genetic resources to flow back to countries that act to conserve biodiversity and provide access to their resources. The Convention thus enables market incentives to complement other private, national, and multilateral mechanisms that can support biodiversity conservation.

The Convention requires that Parties facilitate access to these resources—a particularly important issue for the pharmaceutical, biotechnology, and seed industries that use them. And, the Convention provides a framework within which benefits from the use of these resources can flow back to the country of origin, including both financial resources (i.e., royalties) and technologies. Given the central role of new

¹⁴This principle was a key element of the International Undertaking on Plant Genetic Resources and the FAO Commission on Plant Genetic Resources—both established in the 1980s and involving some 135 countries.

technologies in addressing many environmental concerns, the inclusion of technology transfer articles is now commonplace in international agreements including, for example, the Montreal Protocol on Substances that Deplete the Ozone Layer, Agenda 21 (adopted by the United Nations Conference on Environment and Development), and the United Nations Framework Convention on Climate Change. Such provisions aid biodiversity conservation in two ways. First, technologies like seedbanks, tissue culture, and inventory and data management systems help meet conservation objectives directly. Second, technologies enabling countries to make greater use of biodiversity in agriculture and industry establish even greater economic incentives for conservation.

It is not surprising that the Convention articles addressing these subjects of access to genetic resources and technology (Articles 15 and 16) have been the focus of controversy. These articles state that companies must now pay for access to resources that they previously could obtain for free. While some firms saw this as an increased cost, many others had already recognized that it was good business practice and, in fact, was likely to reduce research costs over the long-run. Thus, this type of benefit "sharing" was already being pursued by both the public and private sector even before the Convention was negotiated. Examples include:

- A 1991 agreement between Merck Pharmaceuticals and the Costa Rican National Biodiversity Institute (INBio) under which Merck receives chemical extracts from INBio in return for an upfront payment, royalties, and technology transfer to the country. The benefits returning to the country all support conservation initiatives. Merck, Costa Rica, and biodiversity conservation all benefit from this business alliance premised on negotiated terms for exchange of financial, technological, and genetic resources.

- A material transfer agreement developed by the U.S. National Cancer Institute (NCI). NCI has insisted that the rights of nations of origin be recognized in any products derived from the country. This agreement acknowledges the need for a sharing of benefits if long term goals for sustainable development and drug discovery are to be met.

- U.S.-based Shaman Pharmaceutical's drug discovery is premised on "benefit sharing" not only with the nation of origin, but also with the indigenous groups whose knowledge helps the company locate promising new drugs.

Reinforcing the market nature of these provisions for benefit sharing, the Convention on Biological Diversity stresses that transfers will be made on "mutually agreed" terms. The November 16, 1993 letter of submittal of the Convention on Biological Diversity from the State Department to the President, notes the "voluntary" nature of these agreements between countries providing genetic resources and firms seeking resources. Under the Convention, countries may now establish regulations governing access to their resources. Those regulations could, for example, specify terms for return of financial or technological benefits, requirements for environmentally sound collecting, stipulations that benefits should flow to local communities and indigenous groups, and so forth. Although a company could not obtain material from that country without agreeing to those terms (or negotiating appropriate terms), it is entirely up to the company to decide whether or not to accept those terms. A U.S. company thus cannot be forced by the U.S. Government to provide technology to another country or to enter into an agreement with a country that it did not feel was in its own self-interest. Moreover, the Convention does not provide an independent basis for countries to seek "compulsory licenses" on patented technology of U.S. firms.¹⁵

¹⁵ Concern that the convention provided a basis for the use of compulsory licenses as a mechanism to meet the objectives of technology transfer was a primary reason for the decision of the U.S. not to sign the convention in 1992. For a private company to maintain its patent rights when selling a patented product in another country, it must first obtain a patent in that country. To obtain the patent, the patent holder must disclose information that would enable another individual "skilled in the art" to build or develop the patented product, but in return the patent holder obtains an exclusive right to sell the product for a period of time ranging up to 20 years. At the patent holder's discretion, the rights to build and sell the product can be licensed to another individual or company; this typically involves a payment for the license or a "cross-licensing" arrangement in which a license for the use of another product is obtained in return.

All countries, including the U.S., have provisions for "compulsory licensing" of patented technologies under specific circumstances. The use of compulsory licensing requires a company to license a patented product or technology under terms specified by the government. Governments retain this authority in order to ensure that important new inventions are not withheld from the market due to the self-interest of the patent holder (i.e., the new patented technology may compete with its own product.) and to ensure that a patent held by a foreign company is "worked" in that country.

One of the strengths of the Convention is that it also recognizes the important role that local communities, women, and indigenous people play in conserving biological diversity and ensuring its sustainable use. Just as the Convention seeks to strengthen the economic incentives for nations to protect their biological diversity, so it seeks to encourage the equitable sharing of benefits arising from traditional knowledge of indigenous and local communities with these communities and to protect and encourage customary uses of biological resources.

Third, the Convention will establish a multilateral mechanism to focus international activities, help guide limited resources to the highest priorities, and provide financial support for conservation needs in developing countries. Although the conservation of biodiversity is in the national interest of all countries, there are two important reasons for global concern and action. First, many of the benefits of biodiversity—ranging from ethical considerations to its role in global carbon, water, and nutrient cycles and its use in industry—extend far beyond the boundaries of a nation. Second, because of pressing immediate needs for resources to address educational, health, poverty, and economic development goals, many developing countries do not have sufficient resources to support longer-term objectives like the conservation of biodiversity. Nations need a mechanism for merging scientific input on status and trends in biodiversity with political and economic considerations of needs and opportunities in order to make the most effective and efficient use of the resources available. The Biodiversity Convention can provide this mechanism.

IMPLEMENTING THE BIODIVERSITY CONVENTION

What should the United States do to ensure the successful implementation of the Convention on Biological Diversity? It is useful to consider both the actions that the U.S. should take with regards to ratification itself, and the steps the U.S. could take as a party to the Convention.

Ratification.—There is every reason for the United States to ratify the Convention quickly in order to participate in the initial meetings of the Conference of Parties. As with many other international agreements, including the Climate Convention and the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes, the rules of procedure for the Conference of Parties will be adopted by consensus of the Parties. Moreover, the initial meetings of the Conference of Parties will be significant in setting the course of implementation of the Convention. In both cases, it is in the interest of the United States to be involved in these discussions and decisions.

The U.S. Administration has proposed that a set of "understandings" be included in its instrument of ratification. These understandings will be important signals to other countries and to U.S. industry. Such statements have been filed by countries with ratification instruments on previous occasions, and a number of countries (including the U.S.) have already made formal declarations of interpretation at the time of adoption of the agreed text on 22 May 1992 and on signature of the Convention.

There is a wide range of views among environmental and industry groups on the desirability of including these understandings with our formal instrument of ratification. On the one hand, some industry groups feel strongly that these understandings are essential to assure them that their interests are protected. On the other, some non-governmental organizations working on environment and development issues feel that it is unwise to file such understandings at all. These organizations are concerned about the negative signals that they may send to other nations, and feel that they might hinder the Convention's implementation. Filing such understandings might be seen as an attempt to renegotiate language in the Convention that resulted from delicate compromises among many countries' negotiators, could create ill will among other Parties, and could call into question the U.S. commitment to the objectives of the Convention.

Although the U.S. may feel it necessary to include "understandings," there is no question that the U.S. should keep any such statements to the very minimum. In this context, the understandings of Articles 3 and 22 that are proposed by the Administration might warrant reconsideration.

First, Article 3 of the Convention reaffirms Principle 21 of the Stockholm Declaration, that states have "the sovereign right to exploit their own resources pursuant

Most analyses uphold the view that the Convention does not provide an independent basis for the use of compulsory licenses (Porter, 1992; Gollin 1993). That is, a country could not seek a compulsory license on the basis of the terms of this Convention. Moreover, there is no particular incentive for a country to seek such a license in any event, since private firms concerned about their property rights would then be less likely to transfer technologies or invest in the country.

to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." The proposed Understanding states that the U.S. "understands that Article 3 references a principle to be taken into account in the implementation of the Convention." Since the principle is already part of customary international law, the U.S. understanding merely restates its pre-existing status as a guiding principle and seems to even imply a narrowing of that customary law. The understanding thus does not seem to be necessary.

Second, the Administration proposes to include an understanding of Article 22 recognizing "sovereign immunity" of military ships and aircraft from the Convention's obligations but noting that the U.S. will seek to operate such vessels or aircraft in a manner consistent with the Convention. Since the concept of "sovereign immunity" is understood to be part of the law of the sea and already recognized under Article 22(2), this understanding again seems redundant.

Other portions of the proposed understandings deal with concerns expressed by some U.S. firms about the protection the Convention provides to intellectual property rights. In December 1992, I participated in a working group with individuals from Merck Pharmaceuticals, Genentech, Shaman Pharmaceuticals, World Wildlife Fund, and the Environment and Energy Study Institute to explore disagreements over the interpretation of the Convention and to seek to identify a means of overcoming those differences. That group felt that a statement of how the U.S. planned to interpret specific articles in the Convention could provide one mechanism to address continued concerns expressed by U.S. industry.

Our working group also found, however, that the bulk of the concerns that had been expressed by industry were in fact adequately addressed in the text of the Convention. It became apparent that the real need was for increased understanding by industry of the actual meaning of the Convention and that this educational process was at least as important as the filing of a formal understanding with the instrument of ratification. The interpretive language that our group developed was shared with environmental and industry groups and with the Administration in the hopes that it would be helpful in their evaluation of the Convention. Much of that language simply restated sections of the convention that responded to concerns voiced by the previous administration when it decided not to sign the Convention in 1992.

The understandings proposed by the Administration with regards to these concerns over intellectual property rights in the transmittal message to the U.S. Senate are largely consistent with the conclusions of our working group. As part of our effort to increase industry understanding of the Convention, our group noted that under Article 38, the U.S. could withdraw from the agreement in the unlikely event that a "worst case" elaboration of the convention ensued. Since this is already clearly stated in the Convention, however, it would be provocative and harmful to future negotiations if the U.S. were to begin to unilaterally specify conditions under which it would withdraw from the Convention.

Our working group did not feel that we had the expertise to fully deal with the issues raised regarding the financial resources and financial mechanism discussed in Article 20 and 21. However, I should note that the Administration's interpretation of Article 21 has the effect of reducing the accountability of the financing mechanism to the Convention's administrative structure. The Convention clearly states that the financing mechanism is to be "accountable" to the Conference of Parties. The Administration should thus use its best efforts to ensure that there are procedures and mechanisms that make the financing mechanisms accountable for meeting the Convention's objectives.

IMPLEMENTING THE CONVENTION

The real meaning of the Convention will not be determined by the various "understandings" filed by governments, but instead will take shape as the Parties put their interpretations into practice. This suggests that active implementation of the U.S. interpretation is far more important than a statement filed upon ratification.

Because the Convention can be viewed as a "framework" agreement, there has been discussion about the desirability of establishing protocols under the agreement. Because protocols must be ratified by each member state, the prospect exists that different protocols may apply to only partial membership of the Convention. While this would make sense for protocols dealing with specific geographic regions, it will generally be more efficient for the Conference of Parties to seek to develop and adopt Understandings or Resolutions that would apply to all parties.

The U.S. could take the following steps to shape the evolution of this Convention:

1. *Benefit Sharing and Technology Cooperation.*—Firms that obtain genetic resources from other countries now may be required under the Convention to compensate those countries for that resource access. Parties to the Convention also assume an obligation to facilitate the transfer of technologies to meet the Convention's objectives.

Developed countries need to quickly demonstrate how they will meet this obligation. It is clear from the initial opposition of some segments of U.S. industry to the Convention that even here there is confusion over how this benefit sharing can take place under market mechanisms, and how it can be stimulated by public sector actions. It should thus not be surprising that there is skepticism among developing countries as well. In fact, there are a number of actions that could help meet this obligation. For example, the U.S. could:

- Support the establishment of intermediaries (or "clearinghouses") that could provide financing or information related to technology transfer meeting the objectives of the biodiversity convention.
- Help finance collaborative research and development based on genetic resources. The network of International Agricultural Research Centers is an existing example of such collaborative research and technology transfer related to genetic resources.
- Provide tax incentives to encourage technology cooperation with countries providing genetic resources. Tax incentives could induce companies to increase the involvement of source countries in the scientific research based on genetic resources, strengthen source country research capacity, or provide technologies for the conservation and sustainable use of biological diversity.
- Provide grants to strengthen developing country institutions so that they can establish alliances with U.S. corporations to develop genetic resources into new products. The AID/NSF/NIH International Cooperative Biodiversity Grant program is an example of such a program.
- Purchase patents (or obtain licenses) that could help build developing country capacity for conserving and utilizing genetic resources. The U.S. could also provide grants to developing countries enabling them to purchase technologies relevant to the conservation and sustainable use of biological diversity directly.
- Provide training in the use of technologies for the conservation and use of biodiversity, or take other steps to build capacity in developing countries for acquiring these technologies. The existing international training program of the U.S. Forest Service and the U.S. Fish and Wildlife Service is one model that could be replicated or expanded.

Not only would such actions help slow the loss of biodiversity, but they would also help meet U.S. objectives with regards to worldwide recognition of private property rights. One of the ironies of the initial opposition of the U.S. to the biodiversity convention was that the Convention was said to threaten intellectual property rights. In fact, by giving developing countries the opportunity to benefit from the exploitation of their biological resources and from technological innovations related to those resources, the Convention on Biological Diversity can enhance the incentive for countries to establish stronger intellectual property rights.¹⁶ Rather than relying on the "stick" of Super 301 trade retaliation to force acceptance of stronger IPR protection in developing countries, the Convention holds out a "carrot:" countries that adopt stronger IPR will be able to receive greater benefits from the use of their biodiversity in the biotechnology and pharmaceutical industries.

2. *Clearinghouse Mechanisms.*—At its first meeting, the Conference of Parties of the Biodiversity Convention will establish procedures and set priorities. The U.S. should emphasize the importance of the clearinghouse mechanism for scientific and technical cooperation called for under Article 18(3) as a priority action for the effective implementation of the Convention. Not only does such a mechanism feature centrally in any effort to establish effective market-based conservation mechanisms, it also helps ensure equality of bargaining power of institutions (or local communities) in developing countries and companies in developed countries. By providing institutions and communities with training, education, and legal and technical assistance the clearinghouse can help enhance the value of their biological resources and thus encourage conservation.

3. *Biosafety.*—Article 19(3) of the Convention calls on parties to consider negotiating a protocol that sets international standards for "biosafety," that is, setting out appropriate procedures in the field of the safe transfer, handling, and use of geneti-

¹⁶ For example, Costa Rica's Minister of Foreign Trade has said, "Costa Rica is really starting to understand the need for protection of property rights, especially now with the biodiversity issue, and also since we are now exporting our own software" (Coughlin, 1993).

cally modified organisms that may adversely affect the conservation and sustainable use of biological diversity. The Administration has stated that it does not believe that a protocol on biosafety under this Convention is warranted. This judgment seems premature.

The U.S. should be open to consideration of the pros and cons of a protocol on biosafety. Developing countries do have legitimate concerns about the safe transfer of biological materials. Not only do these countries lack the regulatory and enforcement capabilities that we take for granted, but on several occasions experiments that would have been unlawful in the U.S. were performed in developing countries without their knowledge or consent. The U.S. seems to be blindly opposed to such a protocol, a stance troubling reminiscent of official disregard of public concern over risks of other powerful technologies like nuclear power. Effective policy must respond to public attitudes as well as technical data. Since legitimate concern exists, the U.S. should take steps to address that concern, possibly through a protocol, not reject it out of hand.

Very few people, even within the biotechnology industry, would argue that biotechnology releases should not be regulated. In today's competitive global economy, however, governments might be tempted to remove biosafety regulation in order to give domestic industry an advantage over foreign competitors. Minimum international standards for biosafety can ensure public health and environmental protection by establishing a level playing field for industry, and reducing the temptation to put public safety at risk.

4. *Regional Implementation.*—Because of the importance of conserving shared ecosystems and species (forests, migratory birds, fish, and butterflies), regional agreements provide some of the most significant opportunities for implementing the Biodiversity Convention. The Western Hemisphere Summit, slated for December 1994, provides an excellent setting for moving such regional approaches forward. At that summit, heads of state could both commit to actions and targets for conserving biodiversity and inventorying species, and agree to international standards or mechanisms for exchanging information about biodiversity and for promoting technology cooperation related to its conservation and sustainable use.

CONCLUSION

The Convention on Biological Diversity is a pivotal element of the international response to the crisis of species extinction. This crisis represents a tragic loss of resources that are of great value to humanity today and could provide even greater benefits in the future. The Convention is sound and the Senate should give its swift consent to ratification. The U.S. should then move quickly to demonstrate how the Convention can be implemented in a constructive and efficient manner.

The CHAIRMAN. Thank you very much, and I appreciate the specificity of your thoughts.

I would like to ask each of you this question, and that is, what steps can be taken to make the convention more effective? And I think Dr. Reid has already answer it. What would be your thoughts, Dr. Albers-Schonberg?

Dr. ALBERS-SCHONBERG. I would say that very speedy ratification that brings the United States to the table as a party to the conference is the most important.

The CHAIRMAN. Then, do you have any thoughts as to what the next step should be after we have conversed at the table?

Dr. ALBERS-SCHONBERG. Not off the top of my head.

The CHAIRMAN. Ms. Conte, I would like to ask you another question. I always thought a shaman was a person beating drums. I did not realize it involved chemicals.

Ms. CONTE. Well, the definition of the word shaman is a medicine man, a very wise and well respected term in Indian cultures and sometimes they beat drums.

The CHAIRMAN. And what would be the measures that you would like to see taken for passage here?

Ms. CONTE. I would like to reiterate what Walter said about limiting the understandings, the interpretive statements, and any ca-

veats that go along with our support of and ratification of the treaty. Already because we are Shaman Pharmaceuticals, we are in the midst of this day in and day out, we are dealing with parties and countries that are very supportive of the treaty.

It has to do more with the perception of the United States because of the history of them originally not signing the treaty, although, of course, that is associated with the change of administration. But the fact that when they signed there was an interpretive statement it has somewhat clouded their support and commitment to the treaty.

The CHAIRMAN. Thank you. If the United States by some mischance, I call it a mischance, did not ratify the convention in time for the first meeting, do you believe that the interests of United States companies would be adequately protected at that meeting by other nations?

And I guess this is a question primarily directed at Dr. Albers-Schonberg and Ms. Conte.

Dr. ALBERS-SCHONBERG. Several European countries are very much in favor of the treaty and could possibly represent us very well. Their industries have similar concerns as we have and they can bring that up.

So, I would feel that we would have allies, yes. But again I would prefer it if we ourselves would sit at the table.

The CHAIRMAN. Ms. Conte.

Ms. CONTE. On certain issues where there is an alignment among Western countries I think that is the case, but I also think in the long-term that could have a very negative effect on U.S. based businesses. If the United States is not there to provide leadership or at least provide some influence there could be provisions that may, for example, limit access to countries that are not members of the treaty and are not strong supporters of the treaty.

So, in the long-term I think it can be very negative, and I do not think U.S. withdrawal or standing back will send a signal that can have anywhere near the influence as participating in those conferences.

The CHAIRMAN. Dr. Reid.

Dr. REID. Could I reinforce that point? Even when the United States initially decided not to sign, some countries—Venezuela in particular—immediately took steps to exclude U.S. industry from exploring for biodiversity in those countries. And I think that if the U.S. were not at the table at the first conference of parties, a number of countries would start taking actions that might in fact impede industry.

And let me also stress that there really is no reason not to be there. Because the procedural mechanisms are established by consensus, the U.S. by being at the table is in a prime position to be able to ensure that its interests are met. There is no reason to wait for other countries to do that for us.

The CHAIRMAN. I would agree that there is no reason, but the strongest voice in Government is inertia, and I think delays can come that would have no rational reason for them, but that is what we have to be careful of.

I thank all of you for being here. Are there any further thoughts that you have? [No response.]

I would ask unanimous consent that the statements of Senators Helms and Brown be included in the record.

[The information referred to follows:]

PREPARED STATEMENT OF SENATOR JESSE HELMS

Mr. Chairman, I have a number of concerns about this particular treaty.

For openers, many nations represented in the negotiation of this treaty had national agendas having little to do with the conservation of biological diversity. Further, I believe that many of the clauses and statements in this treaty reflect a rather common view among so-called developing nations that this treaty is some sort of an international cash cow to transfer wealth and technology from developed nations while promoting the economic growth of developing nations without interfering in any way with their sovereignty.

In particular, I find the convention's treatment of intellectual property rights, finances, voting procedures, technology transfer and biotechnology dangerously muddled, vague and disturbing.

But I have an even more fundamental concern: The treaty before us will commit the United States to certain obligations—but the Senate, which is being urged to ratify this treaty now, has no way of knowing the nature and extent of those obligations. The treaty spells out no details, nor does it refer directly to any existing mechanism or structure.

For example, Articles 20 and 21 of this treaty commits the "developed country Parties" to provide "new and additional financial resources" to "developing country Parties." Who are the developed countries and who are the developing countries? That will not be known until after the treaty enters into force. At its first meeting, the so-called "Conference of Parties" will establish a list.

What about these "new and additional financial resources"? How much money will the Senate be committing the United States to paying by ratifying this treaty? That seems like a straightforward question, and one which is incumbent upon us to ask before ratifying. Yet we don't know. Once again, we learn that "there shall be a mechanism" for the provision of financial resources to developing countries and the operation of that mechanism shall be carried out "by such institutional structure as may be decided upon by the Conference of Parties at its first meeting."

These are just a few examples among many fundamental issues that are left undecided in the text of the agreement itself.

In short, Mr. Chairman, we are being asked to buy a pig in a poke. The Administration has told us that it will promote and defend U.S. interests at this Conference of Parties. They have told us that they will not agree to any obligation, financial or otherwise, that is not acceptable to the United States. Mr. Chairman, I must point out that the Framers of the Constitution gave the Senate the right to advise and consent on treaties. This treaty as a "no reservations clause." This provision effectively takes away the Senate's constitutional right to advise in any concrete way. Now the Executive Branch is attempting to take away the Senate's constitutional right to consent.

This so-called treaty is more of a preamble to a treaty. The essential nuts and bolts of the treaty will be determined at the Conference of Parties. If the Senate precipitously ratifies this preamble posing as a treaty, it will have given away one of its major constitutional authorities and will have betrayed the trust of the electorate.

There is a simple solution. Article 23, paragraph 5 of the treaty provides that "any state not Party to this Convention may be represented as observers at meetings of the Conference of Parties." I propose that we not ratify this treaty but encourage the State Department to participate in the Conference of Parties. Our voice, and the withholding of our financial participation, will give greater strength to the U.S. negotiating position at the Conference of Parties than the single vote we would gain by ratifying the treaty now. When the voting rules, financial procedures, definitions of developed and developing states, technology transfer arrangements, biotechnology issues, and all the other crucial details are worked out, then come back to the Senate for ratification.

Mr. Chairman, the Senate should not ratify a preamble.

PREPARED STATEMENT OF SENATOR HANK BROWN

Mr. Chairman, there has never been any doubt that the aims of the Biodiversity Convention—especially the protection of intellectual property rights—are important. Preserving the vast diversity of the Earth's ecosystem and devising a fair and equi-

table system for providing access to invaluable natural resources for the benefit of all mankind is commendable.

Mr. Chairman, I would like to say that on behalf of the Congressional Biodiversity Caucus, we feel that a key element to a fair and balanced Biodiversity Convention is the recognition of the value of the products of nature as well as the contribution made by persons and institutions who modify those products into useful articles of commerce. The value of biological materials increase when intellectual property rights are created, protected and enforced by all nations. Without adequate and effective intellectual property protection there will be less incentive for business investment in the developing nations whose territory encompasses much of the world's biological material.

We feel that this need for strong and effective protection of intellectual property along with the need to preserve the principal of voluntary transfer of technology has been adequately addressed in the transmittal documents accompanying the Convention. Nonetheless, there are a number of ambiguities, especially with regard to what may appear to be open-ended financial commitments. It is especially important to articulate clearly the relationship between the Conference of the Parties and the governing body of the financial mechanism. Developing countries must not be placed in a position to impose financial obligations upon the developed, major donor nations, including the United States. Articles 20 and 21 dealing with the financial mechanism clearly need modification.

Mr. Chairman, the interpretation of the Convention submitted by the U.S. State Department appears to limit our financial liability under the Convention. We believe that the Convention, subject to the State Department's interpretation of U.S. financial liability arising under it, will be an effective tool for meeting the stated objectives of conserving biological diversity and providing for its sustainable use.

The CHAIRMAN. I would note further that the record will remain open for questions for the remainder of the day. I thank all of you for being here, and this hearing is adjourned.

[Whereupon, at 11:22 a.m., the hearing was adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

RESPONSES OF TIMOTHY E. WIRTH TO QUESTIONS ASKED BY SENATOR PELL

FUNDING ISSUES—THE GLOBAL ENVIRONMENT FACILITY

Question. Why does the United States want the GEF to be the Convention's financial mechanism?

Answer. The U.S. is convinced that the GEF will be effective in its programs, efficient in cost, and politically acceptable to donors and recipients alike.

The U.S. believes that the resources and capacity of the existing development institutions must be leveraged to address global environmental problems.

Negotiations recently concluded on the restructuring of the GEF. As a result of these negotiations the GEF has the political backing of the donors and recipients alike. We anticipate that this sense of ownership of the Facility will translate into concrete attachment to the goals of the GEF, including a commitment to the protection of biological diversity.

Question. Negotiations to restructure the GEF were completed several weeks ago in Geneva. What was the outcome of these negotiations?

Answer. The outcome of the negotiations was an agreement, on the part of the representatives of the 73 participating states, the World Bank and the United Nations Environment and Development Programmes, to reform the institutional arrangements of the GEF. Noting the mutual satisfaction with the result, donors agreed to replenish the Facility's resources at just over \$2 billion over a four year period.

Question. Please describe the new governance structure for the GEF and the United States' role in that structure.

Answer. The new governance structure provides that the Facility's policies and projects are ultimately determined by the "Participants"—the member states of the Facility. There will be an Assembly of all Participants that meets every three years. However, the actual work of the GEF will be conducted by a "Council" that meets every six months, or as often as necessary to conduct its business.

The Council is composed of 32 Participants—14 non-recipient donors (the OECD), 2 from countries with economies in transition, and 16 recipient countries (developing countries). Participants who sit at the table will represent other like-minded countries in a constituency system, similar to that used in the development banks.

The U.S. will have its own seat at the table, based on its significant financial contribution. Voting in the Council will be based on a "double majority"—where passage of a measure requires the consent of 60 percent of the Participants and 60 percent of all contributions. As a large donor, the U.S. will have commensurate influence over Council decisions.

Question. How are total funding levels for the GEF decided? How is a country's percentage share of that total determined?

Answer. The burden sharing arrangement for the first GEF replenishment is based on the current agreement for contributions to the International Development Association (IDA). IDA is the window of the World Bank which funds projects in the poorest countries of the world. As in the development banks, total funding levels are determined based on stated need, coupled with an appraisal of the institution's capacity to process projects, the recipients absorptive capacity to receive projects, the donors' level of satisfaction with the policy framework, and the capacity of the donors to pay.

A country's share in the total replenishment is determined through a series of negotiations on burden sharing. Although countries make a firm pledge to assume a share of the total replenishment, participation is voluntary and there are no assessed contributions.

Question. Please describe the competition, if any, between UNEP and the World Bank for control of the financial mechanism.

Answer. There is no competition between UNEP and the World Bank over the control of the restructured GEF, which we anticipate will be designated as the operating entity of the convention's financial mechanism. The restructured GEF, will be managed by an independent Secretariat, to which the World Bank and UNEP are equally accountable. Moreover, unlike the World Bank, UNEP has no intention of engaging in field-based projects, outside of small scale research and capacity building.

RELATIONSHIP BETWEEN CONVENTION AND FUNDING MECHANISM

Question. Please describe the respective responsibilities of the Convention's Conference of the Parties and the governing body of the GEF under the Convention.

Answer. Under the Convention, the Conference of the Parties will determine the policy, strategy, program priorities and eligibility criteria relating to the access to and utilization of financial resources under the financial mechanism. The Conference of Parties (COP) to the Convention does not set the levels of financial commitments of Parties. The COP can only give "guidance" to the financial mechanism, on the amount of resources needed.

It is important that the United States participate in the first COP to play a role in preparing this guidance. In this regard it should also be noted that although the COP cannot in any way bind the donor nations to financial commitments, U.S. participation in development of rules of procedure at the first COP will ensure that the rules with regard to funding fully protect donor interests.

The GEF will make all decisions with respect to operational modalities to translate policy guidance from the COP into projects. The reforms in the GEF guarantee that the United States, as a large donor, will have a commensurate influence over funding decisions.

All U.S. financial commitments under the Convention are met through our contribution to the financial mechanism. As stated above our determination of the U.S. voluntary contribution to the GEF will be guided by input from the COP to the Convention, and the GEF, as well as our own evaluation of the success of the GEF and our capacity to contribute.

The total amount of resources available to the GEF will be determined by the donor countries, taking into account COP guidance on amount of resources needed, and the programming requests of the GEF.

Finally, it must be emphasized that developed countries do not have an obligation to fund all measures taken by developing countries to implement the Convention, but only the agreed full incremental costs of implementing measures that are agreed between a developing country party and the institutional structure operating the financial mechanism.

Question. Do other countries share the U.S. view on this relationship?

Answer. Seventy-three countries, including all OECD and key developing countries, agreed to the GEF Instrument, which sets forth the terms for the restructured GEF. We are therefore confident that others share our view on this relationship.

Question. How would a dispute between the two bodies about their responsibilities under the Convention be mediated?

Answer. Arrangements giving effect to the relationship of the two bodies have yet to be worked out. The U.S. believes that such arrangements should be sufficiently flexible to allow a cross-fertilization of ideas among the two bodies. We do not anticipate that a dispute between the two bodies will arise or that there will be a need for a dispute resolution mechanism.

Ultimately, it is up to the Parties to the Convention to interpret its provisions and to the Participants in the GEF to interpret the Basic Instrument.

Question. How does the relationship between the Biodiversity Convention's Conference of the Parties and the GEF differ from the relationship between the GEF and Conference of the Parties of the Climate Convention?

Answer. The relationship between the Biodiversity Convention's Conference of the Parties and the GEF does not differ in substance from the relationship between the GEF and the Conference of the Parties of the Climate Convention although the language differs slightly. Although Article 21(1) of the Biodiversity Convention provides that the financial mechanism shall function under the "authority" of the COP, the United States understands that the "authority" of the COP is related to determining policy, strategy, program priorities, and eligibility criteria. The United States has proposed that a statement to this effect should be included in the U.S. instrument of ratification. The Convention does not give the COP the authority to govern the GEF, make its project funding decisions, or assess contributions. In this regard the relationship of the GEF to the Biodiversity COP and the GEF to the Climate Change Convention COP are the same.

COST

Question. The Convention provides that "the developed countries Parties shall provide and new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs * * * of implementing measures which fulfill [sic] the obligations of this Convention".

What does the Administration estimate those costs to be?

Answer. First, it must be emphasized that developed country Parties do not have an obligation to fund all biodiversity projects taken by developing countries in implementation of the Biodiversity Convention. As set forth in the U.S. statement of understanding, our obligations under the Convention are limited to providing new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs * * * of implementing measures which fulfill the obligations of this Convention *and that are agreed between a developing country Party and the institutional structure operating the financial mechanism.*

Agreement between the developing country Party and the institutional structure (i.e., the GEF) on a project will be constrained not only by the guidance from the Conference of the Parties and by decisions taken by the governance structure of the GEF, but by the amount of resources available to the GEF. The amount of resources available to the GEF will be determined by regular, voluntary replenishment by the donor countries, taking into account the guidance from the Conference of the Parties on the "amount of resources needed" by the financial mechanism. As stated by nineteen countries at the time of the adoption of the Convention's Final Act and as reiterated in the U.S. statement of understanding, the authority of the Conference of the Parties concerning amount of resources needed does not extend to the extent or nature and form of the contributions of the Contracting Parties.

As stated above the current GEF replenishment will total \$2 billion over the next four years, of which biodiversity projects will have a substantial share. We cannot at this time predict the amount of future replenishment, and the Intergovernmental Committee on the Convention on Biological Diversity has only just begun to prepare its advice on the "amount of resources needed" by the financial mechanism.

Question. What share of those costs would be borne by the United States?

Answer. The United States has pledged \$430 million to the replenishment of the GEF over a four year period. This represents roughly 21 percent of the total replenishment.

Question. How does the phrase "agreed full incremental costs" limit developed country financial obligations?

Answer. As stated above, the phrase "agreed full incremental costs" is one of several ways in which U.S. obligations under the Convention are limited. U.S. obligations are further limited to those projects that are agreed between the GEF and the developing country, a process which will be driven in part by the availability of resources in the GEF to fund such projects.

The phrase "agreed full incremental costs" is related to the notion of global environmental benefit. It limits developed country obligations in two respects: First, the GEF can only approve projects that achieve global environmental benefit; Second, the GEF will only finance the incremental costs necessary to achieve such global environmental benefit.

Question. The concept of incremental costs has been called into question by two recent studies of the Global Environment Facility's pilot phase operation. Both studies found the concept difficult to implement and of dubious value. Does the Administration share this view, and, if so, what are its implications in determining financial obligations arising from the Convention?

Answer. The concept of incremental costs is quite important, because it limits the scope of developed country Party obligations under the Convention. It is linked to the concept that the GEF is available to fund only that portion of a project that has a global environmental benefit. Under Article 20(2) of the Convention, the Conference of the Parties is tasked to establish an indicative list of incremental costs. Preparatory discussions on this indicative list have only just begun.

EVALUATION OF THE GLOBAL ENVIRONMENT FACILITY

Question. What is the Administration's evaluation of the GEF's lending program for biological diversity? What are its weaknesses? What are its strengths?

Answer. The Convention's Conference of the Parties is primarily responsible for developing the broad policy framework for the GEF to implement. To date, the Convention's COP has not reported out its policy guidance. The Administration will work to ensure that the convention's policy guidance is based on sound analysis and strong scientific foundations.

The pilot phase of the GEF was designed as an experiment to try new approaches to solving global environmental problems. However, although the Administration believed that the pilot phase Facility's biological diversity portfolio showed promise, we were also concerned about several aspects of its performance. In particular, we criticized large investment projects, which we believe have a tendency to overwhelm recipient's implementation capacity. In the pilot phase, we were also concerned that projects were going forward without appropriate consultation with affected communities or adequate access to project information.

We believe that the GEF's strengths will come from its ability to engage the recipient governments in the process of protecting biodiversity. We also believe that the GEF can improve the capacity of the recipient governments themselves to address global environmental problems. The GEF may also, through financial devices such as trust funds, provide for long term mechanisms for protecting biological diversity at the national level. We also hope that the GEF will increase its involvement at the local level, by funding projects to be executed directly by local communities and NGOs through its Small Grants Window.

Question. What changes, if any, will be necessary in the Facility for it to become the financial mechanism for the Convention?

Answer. As a result of the recently concluded negotiations to restructure the GEF, no further changes to the Facility will be required.

Question. Is there a viable alternative to the GEF for supporting the operation of the Convention?

Answer. The U.S. never believed that there was a viable alternative to the GEF. At the same time, we conditioned our full support for the GEF upon its successful restructuring. The U.S. negotiated hard over the last year to ensure that the restructured GEF answered the criticisms that were leveled against the Facility's pilot phase. We believe that the restructured GEF addresses the criticisms of the pilot phase, and meets our own negotiating objectives. We therefore consider the issue of alternatives to the GEF closed.

UNDERSTANDINGS—LEGAL STATUS OF UNDERSTANDINGS

Question. The Administration is recommending that seven understandings be attached to the United States instrument of ratification. These understandings are important in clarifying the United States interpretation of a number of the controversial Articles in the Convention, including those dealing with intellectual property rights and financing. The Convention prohibits reservations.

What standing do these understandings have in international law?

Answer. At a minimum, an understanding indicates an authoritative statement of the U.S. interpretation of a provision, puts other parties on notice of the U.S. position, and estops them from later claiming that the U.S. interpretation is being put forward in bad faith.

Question. If the United States was involved in a dispute that was submitted for arbitration and the other disputant contested the validity of the U.S. understandings, could the United States argue credibly to the contrary based on the Convention's negotiating history?

Answer. Most of our statements of understanding are derived from statements made by the U.S. and other countries during the negotiations. We believe all are supported by the text of the Convention and its object and purpose. Thus we have credible arguments to respond to any questions concerning the basis for our statements of understanding. It should also be noted that the United States will not opt for compulsory dispute resolution under the Convention.

Question. Do understandings become part of the text of the Treaty?

Answer. No. However, the understandings are included in the United States instrument of ratification, to be deposited with the United Nations. The United Nations will circulate our understandings to all Parties and signatories.

Article 3.—The Department of State is recommending that the following understanding be included in the U.S. instrument of ratification:

The Government of the United States of America understands that Article 3 references a principle to be taken into account in the implementation of the Convention.

Article 3 states that nations have the sovereign rights to exploit their own resources pursuant to their own policies as well as the responsibility to ensure that activities within their jurisdiction do not damage the environment of other states or the global commons.

Question. Why is this understanding necessary?

Answer. Article 3 is not limited by its terms to biodiversity or to this Convention. Therefore, the understanding is necessary to avoid any inference that Article 3 ap-

plies, as a legal matter, in contexts unrelated to the Biodiversity Convention. It will also serve to avoid any potential ambiguities concerning the relationship of the Article 3 obligation with the other substantive obligations in the Convention.

Unlike Article 3 of the Climate Change Convention (entitled "Principles"), Article 3 of the Biodiversity Convention lacks language introducing the legal obligation (i.e., a chapeau). The Climate Change Convention introduces the legal obligation with the language: "In their actions to achieve the objective of *the Convention* and to implement *its provisions*, the Parties shall be guided, inter alia, by the following: * * * (emphasis added)"

Without this or similar language, it could be inferred that Article 3 of the Biodiversity Convention was intended to constrain the Parties' actions in their activities outside the Biodiversity Convention—a result that the United States believes was not intended.

Lack of the same language also raises the question as to how the Parties' Article 3 obligation in the Biodiversity Convention interrelates with the more specific obligations of the Convention that follow, e.g., Articles 8(g) on living modified organisms; Article 8(h) on alien species; Article 14 on Impact Assessment and Minimizing Adverse Impacts. The understanding clarifies that Article 3 references a principle to be taken into account in the implementation of the Convention.

The proposed understanding does not in any way alter the substance of the Article 3 principle.

Question. How, if at all, does it qualify U.S. obligations under the Convention?

Answer. The understanding is not intended to qualify U.S. obligations under the Convention.

Question. Have any other nations made similar statements with respect to Article 3?

Answer. Yes. Both the United Kingdom and France made similar statements on the record prior to the close of the negotiations.

UNDERSTANDING ON SOVEREIGN IMMUNITY

Question. Why is the understanding for Article 22 necessary?

Answer. The understanding is necessary to confirm that the Convention does not apply to sovereign vessels and to confirm the United States' understanding that each Party nonetheless has the obligation to ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, so far as is reasonable and practicable, with the Convention.

The principle of sovereign immunity is recognized in the Convention through Article 22(2), which obligates the Parties to implement the Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea. The rights and obligations of States under the law of the sea include the traditional principle of sovereign immunity. Sovereign immunity traditionally refers to immunity from the exercise of enforcement jurisdiction, i.e., immunity from arrest, attachment, or execution, wherever located, by any foreign State. It also refers to the immunity of public vessels on the high seas from jurisdiction to prescribe by any State other than the flag State.

Notwithstanding statements made during the negotiations to the contrary, it is possible a country may assert that the principle of sovereign immunity recognized under Article 22(2) does not include the concomitant obligation of the flag State to ensure that its sovereign immune vessels act in a manner consistent with the Convention because it is not yet an obligation under the law of the sea. The proposed understanding is designed to preclude any such argument.

Question. Is this understanding wider than that provided for under customary international law?

Answer. The principle of sovereign immunity is well accepted as a matter of customary international law and is reflected in several articles of the U.N. Convention on the Law of the Sea, including Article 236. It has not yet been definitively established as to whether the concomitant obligation on the flag state has emerged as a principle of customary international law. As set forth at page XVII of the Message from the President transmitting the Convention to the Senate, many delegations took the view in the negotiations of the Biodiversity Convention that both the principle of sovereign immunity *and* the concomitant obligation on the flag State were customary international law. Thus, the obligation may already have ripened into a rule of customary international law. However, given the uncertainties inherent in the development of customary international law, it is prudent to confirm such an understanding in the U.S. instrument of ratification.

Moreover, the proposed statement of understanding is consistent with the sovereign immunity clause in Article 236 of the 1982 United Nations Convention on the Law of the Sea and in other international agreements to which the Senate has given advice and consent, e.g., the London (Ocean Dumping) Convention of 1972, MARPOL 73/78, 1978 Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1990 Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC), 1991 Protocol on Environmental Protection to the Antarctic Treaty, as well as numerous regional agreements.

The proposed statement of understanding is also consistent with U.S. practice in international environmental agreements that do not have a sovereign immunity clause. Regarding such agreements, the United States, with the advice and consent of the Senate, has deposited statements of understanding on sovereign immunity similar to the understanding proposed for the Biodiversity Convention in its instruments of ratification (e.g., the 1989 Basel Convention, the 1986 SPREP Convention, and the 1983 Cartagena Convention). No party has objected to any U.S. statement of understanding on sovereign immunity.

Question. Have other nations submitted, or announced their intention to submit, similar understandings?

Answer. We are aware of no other nations that intend to submit a similar understanding. However, as noted in the Report of the Secretary of State many delegations during the negotiations agreed with the United States that sovereign immunity is a principle of customary international law.

INTELLECTUAL PROPERTY RIGHTS AND TECHNOLOGY TRANSFER—PRIVATE SECTOR TECHNOLOGY TRANSFER

Question. Article 16(4) requires each party to take measures to encourage the private sector to facilitate access to, joint development, and transfer of technology to the public and private sectors in developing countries, including biotechnologies derived from genetic resources and technologies relevant to conservation.

What specific measures does the administration plan to take to implement this requirement?

Answer. The Administration has and will continue to take general and specific measures to implement this obligation.

Generally, the Administration will work with other Convention parties to establish market conditions that will promote cooperation between U.S. and foreign firms. These market conditions include effective systems for protecting intellectual property rights. Establishing and maintaining such market conditions will promote the goal outlined by Article 16(4).

In addition the Administration has developed programs that directly address this obligation. The International Cooperative Biodiversity Groups Program of NIH, USAID and NSF involves US government, academic and private sector participants in collaborative drug discovery programs with developing country partners. The objectives of the program include improvement of infrastructure, training of scientists and assistance with priority health needs of participating developing countries.

The National Cancer Institute has a number of programs which strive to ensure the conservation of biological and cultural resources in countries participating in the natural products drug discovery process and to promote economic growth from the commercialization of pharmaceuticals derived from host-country plants. These programs promote the sharing of benefits among the partners involved in the development and commercialization of promising genetic resources identified by NCI screening programs, including the host countries, the pharmaceutical industry, and NCI.

PROTECTION OF INTELLECTUAL PROPERTY RIGHTS—ACCESS TO AND TRANSFER OF TECHNOLOGY

Question. Article 16 is one of the most controversial provisions in the Convention. The circular cross referencing in the Article's subsections reflects the move and counter-move of developed and developing countries during the negotiations.

Article 16(2) provides that access to and transfer of technology "shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights." In this context, what does "adequate and effective" mean?

Answer. The United States considers the phrase "adequate and effective" to mean a level of protection that provides the owner of proprietary technology with effective legal rights to prevent theft, misuse, or misappropriation of the protected technology. To be considered adequate and effective, intellectual property systems must make protection widely available, without discrimination as to the nature of the

technology or the nationality of the entity seeking protection, and must provide effective accessible means for enforcing rights.

We have advanced this understanding in various fora, including through our bilateral investment treaties with other nations, as well as multilateral efforts such as the North American Free Trade Agreement, and, most recently, the Agreement on the Trade-Related Aspects of Intellectual Property Rights negotiated in the Uruguay Round. We will also advance this understanding of the phrase in the Convention on Biological Diversity.

Question. Could you discuss for the Committee how the Convention's provisions on intellectual property relate to other regimes in this area, particular the recently concluded GATT negotiations on Trade-Related Aspects of Intellectual Property Rights (TRIPs)?

Answer. The Convention's principal reference to intellectual property protection specifies that technology transfer is to occur on terms that recognize and are consistent with the adequate and effective protection of intellectual property rights. In our bilateral trade agreements, the NAFTA, and in the TRIPs Agreement, we and our trading partners have accepted obligations to create legal systems that provide certain specific characteristics of intellectual property protection. Thus, we believe the Biodiversity Convention and our trade agreements that address intellectual property protection are not only fully compatible, but in fact complement each other.

Question. Does the Convention in any way undercut the TRIPs agreement?

Answer. No. We do not believe the Convention can legitimately be used by a country to avoid obligations on intellectual property imposed by the TRIPs Agreement.

Question. Do other countries share the U.S. concerns with respect to the Convention's treatment of intellectual property rights? If so, how have these concerns been manifested? Have other nations submitted understandings in this respect with their instruments of ratification?

Answer. Yes. A number of developed countries share the U.S. concerns regarding intellectual property. The European Economic Community, on behalf of its member states has included a statement on intellectual property rights in its instrument of approval of the Convention (attached). Switzerland (which has not yet deposited an instrument of ratification) made a declaration on intellectual property rights at the time of signing the Convention.

STATEMENT OF THE EUROPEAN ECONOMIC COMMUNITY UPON APPROVAL OF THE CONVENTION ON BIOLOGICAL DIVERSITY

Within their respective competence, the European Community and its Member States wish to reaffirm the importance they attach to transfers of technology and to biotechnology in order to ensure the conservation and sustainable use of biological diversity. The compliance with intellectual property rights constitutes an essential element for the implementation of policies for technology transfer and co-investment.

For the European Community and its Member States, transfers of technology and access to biotechnology, as defined in the text of the Convention on Biological Diversity, will be carried out in accordance with Article 16 of said Convention and in compliance with the rules of protection of intellectual property, in particular multilateral and bilateral agreements signed or negotiated by the contracting parties to this Convention.

The European Community and its Member States will encourage the use of the financial mechanism established by the Convention to promote the voluntary transfer of intellectual property rights held by European operators, in particular as regards the granting of licenses, through normal commercial mechanisms and decisions, while ensuring adequate and effective protection of property rights.

(December 21, 1993)

Question. Due to its vagueness, it is likely that the precise meaning of Article 16 will be established through precedents created during the convention's implementation, to be debated and argued at the meetings of the Conference of the Parties (COP) to the Convention. Are these issues that will be taken up by the COP at its first meeting this November that relate to the protection of intellectual property rights? If so, what are they and what are the Administration's view in those areas?

Answer. We do not anticipate that the COP at its first meeting this November will take up issues relating to intellectual property rights. If it does, however, the U.S. will at every opportunity promote its views on intellectual property rights protection.

Question. Does the Administration have a strategy to advance its views on intellectual property rights protection in the Conference of the Parties, the Global Environment Facility, and other fora associated with the Convention? Specifically, would

the Administration be more supportive of GEF funding to recipients with adequate and effective intellectual property protection over recipients without such protections?

Answer. We will encourage countries to rely on the Convention as an authority and as an impetus for improving their domestic intellectual property systems. We will hold countries to their obligations under GATT TRIPs, which sets a minimum floor of protection for intellectual property. We will seek further improvements in intellectual property protection in the markets of our trading partners.

The Administration will continue to address intellectual property concerns as a trade matter. We will rely, as we have in the past, on bilateral consultations and negotiations to address intellectual property concerns we have with our trading partners. We will also rely on the soon-to-be established World Trade Organization to address intellectual property issues covered by the TRIPs Agreement.

With respect to the Convention, we will actively encourage the Conference of the Parties to focus its attention on the broader issues of technology transfer and scientific and technical cooperation, rather than the specific question of intellectual property standards. To the extent that intellectual property issues are raised in the activities under the Convention, we will actively advance our views in support of adequate and effective levels of protection for intellectual property.

In the GEF, we will continue to promote the adequate and effective protection of IPRs and to facilitate the transfer of technology, consistent with Article 16(2) of the Convention. Insofar as the GEF has agreed to follow the policies, strategy, program priorities, and eligibility criteria of the Convention, we would expect that the programs and projects of the GEF will be in accordance with Article 16(2).

DISPUTE SETTLEMENT

Article 27 provides that for purposes of compulsory dispute resolution, Parties may elect either Arbitration in accordance with procedures contained in the Convention, or submission of the dispute to the International Court of Justice, or both. It would appear, however, that Parties are not required to submit to compulsory dispute resolution procedures at all if they do not want to do so.

Question. What are the Administration's plans in this regard? Does the Administration plan to take a decision whereby the United States could be subject to compulsory dispute resolution procedures?

Answer. The Administration will not opt for any means of compulsory dispute settlement under the Convention, i.e., arbitration in accordance with the procedure laid down in Part 1 of Annex II of the Convention or submission of the dispute to the International Court of Justice. Thus, any dispute involving the United States under Article 27 will be resolved by negotiation, conciliation, or (if the Parties to the dispute agree) the good offices of, or mediation by, a third party. This is consistent with past practice in environmental agreements.

Question. What is the rationale behind this decision?

Answer. Given the questions that have been raised about text of the Convention on issues of the highest concern to the U.S., the U.S. will not subject itself to compulsory dispute settlement under this Convention.

ROLE OF THE CONFERENCE OF THE PARTIES

Question. What are the key issues that must be addressed at the first meeting of the Conference of the Parties?

Answer. The two key issues are financial issues and the biosafety protocol.

FINANCE

Financial issues are numerous. First and foremost, is the question as to how decisions relating to the financial mechanism will be taken. The first Conference of the Parties (COP) will adopt rules of procedure that will answer this question. Only as a Party can the U.S. participate in the consensus decisionmaking required to ensure that the rules of procedure fully protect U.S. interests on questions of funding.

In addition, the Convention charges the COP with the task of choosing a permanent institutional structure to operate the financial mechanism. The U.S. has a keen interest in ensuring that the GEF is designated as the permanent institutional structure.

Once it designates the GEF as the permanent institutional structure, the Convention requires the COP to decide on the arrangements to give effect to the relationship between the COP and the GEF. The U.S. has strong views concerning the relationship between the COP and the GEF, including on such issues as the scope of the COP's authority with respect to the GEF.

At its first meeting, the Convention requires the COP to provide guidance on policy, strategy, and program priorities, as well as detailed criteria and guidelines for eligibility for access to and utilization of the financial resources under the GEF. As the GEF has stated it will defer to the guidance of the COP on such issues, we believe such guidance is of key concern to the U.S.

The Convention also requires the COP to establish an indicative list of incremental costs to guide the GEF. The concept of incremental costs relates to the scope of the Parties' funding obligations under the Convention and the basic purpose of the GEF to fund only those portions of projects that have a global environmental benefit and is thus of high importance to the U.S.

BIOSAFETY PROTOCOL

The Convention requires the COP to consider the need for and modalities of a biosafety protocol. We anticipate that this process could begin as early as the first COP or shortly thereafter. U.S. industry believes, and we concur, that the U.S. will be able to advance U.S. interests most effectively as a Party, rather than as an observer.

OTHER

The Convention also requires other more organizational decisions to be taken by the first COP or shortly thereafter:

- Establish a list of developed country parties and other Parties which voluntarily assume the obligations of the developed country Parties.
- Determine how to establish a clearinghouse mechanism to promote and facilitate technical and scientific cooperation.
- Establish subsidiary bodies.
- Choose a permanent secretariat.
- Adopt financial rules for the governing the funding of the secretariat.
- Adopt a budget.
- Determine the intervals between meetings of the COP.

Question. If the Convention is approved by the Senate, what will be the U.S. objectives at that meeting?

Answer. The United States principal objectives include:

- adopting rules of procedure which fully protect U.S. interests on questions of funding (the U.S. has supported a proposal to require that decisions of the Parties under paragraphs 1 and 2 of Article 21 be made by consensus).
- designating the GEF as the institutional structure to operate the financial mechanism.
- ensuring that any discussions on the topic of biosafety give full and fair consideration of the question of the need for a biosafety protocol and working to persuade other governments that a protocol on biosafety is not warranted under this Convention.
- ensuring that policies, strategy, program priorities, and eligibility criteria relating to the financial mechanism are in accord with U.S. interests.
- ensuring that any arrangements to establish the relationship between the GEF and the COP reflect the authorities and responsibilities set forth in the Convention and the GEF Basic Instrument.
- establishing an indicative list of agreed incremental costs that is consistent with U.S. policy and the GEF Basic Instrument.
- establishing the Subsidiary Body on Scientific, Technical and Technological Advice.

Question. What would be the consequences if the United States was not able to participate in the first meeting of the Parties?

Answer. Rules of Procedure and Decisions Relating to the Financial Mechanism— The Convention requires that rules of procedure must be adopted by consensus. The rules of procedure will determine, among other things, how decisions relating to funding will be made. Only a Party can block consensus. If we are not a Party, we cannot block consensus on unacceptable rules of procedure and thus cannot ensure that the U.S. interests on funding issues will be fully protected. We have supported a proposal to require that decisions of the Parties under paragraphs 1 and 2 of Article 21 be made by consensus.

If we are not a Party, the U.S. likewise cannot ensure that the basic funding decisions themselves are fully acceptable to the U.S. (e.g., designation of the GEF, establishment of arrangements to give effect to the relationship between the GEF and the COP, establishment of policy, strategy, program priorities, and eligibility criteria).

Other OECD countries are in the process of ratifying the Convention, as are we. Thus, it may not be possible to rely on them to ensure that the rules fully protect

the interests of the major donors to the GEF on matters of funding or that the funding decisions themselves are in accord with U.S. interests.

BIOSAFETY

Question. We anticipate that consideration of the need for and modalities of a biosafety protocol could begin as early as the first COP. The United States is the home of the largest and most advanced biotechnology industry in the world. This industry believes, and we concur, that the U.S. will be able most effectively to represent our interests in any discussions on a biosafety protocol as a Party, rather than an observer. Since most other OECD countries do not share the degree of our concerns on biosafety, we cannot rely on them to represent U.S. interests.

Looking beyond the first meeting, what are the Administration's goals in the Conference of the Parties?

Answer. Beyond the first meeting, the Administration's principal goals are to focus the Convention on the conservation and sustainable use of biological diversity and to promote an active subsidiary body on scientific, technical, and technological advice.

The Administration will also work with the Secretariat and the Conference of the Parties to ensure that implementation of the Convention is consistent with the obligation to provide adequate and effective protection of intellectual property rights. Finally, the Administration will ensure that any discussions on the need for and modalities of a biosafety protocol are scientifically based and analytically sound.

RULES OF PROCEDURE

Question. The Convention states that the Conference of the Parties' rules shall be adopted by consensus. What does "consensus" mean in the context of the Convention? Where is this defined?

Answer. Consensus means the absence of a stated objection. Thus, if any Party objects to the rules of procedure, they can not be adopted. Consensus is a matter of U.N. practice; it is not officially defined.

Question. What are the U.S. objectives with respect to the rules? For example, what rules should apply with respect to the Conference of the Party's decision-making procedures on financial issues?

Answer. The U.S. supports a proposal to require that decisions of the Parties under paragraphs 1 and 2 of Article 21 be made by consensus.

RELATIONSHIP TO THE CONVENTION ON CLIMATE CHANGE

Question. How does the Administration plan to coordinate implementation of the Biodiversity Convention and the Framework Convention on Climate Change?

Answer. Coordination will take place at several levels. First, the Deputy Assistant Secretary of State for Environment and Development serves both as the U.S. Representative to the Intergovernmental Committee for the Convention on Biological Diversity (ICCBD) and to the Intergovernmental Negotiating Committee (INC) under the United Nations Framework Convention on Climate Change. There is overlap between the U.S. delegations to meetings of the Biodiversity ICCBD and to meetings of the INC; this practice likely will continue at and after the first meetings of the Conferences of the Parties to both conventions.

Second, U.S. positions in the ICCBD and in the INC are developed in an inter-agency process chaired by the Deputy Assistant Secretary of State for Environment and Development. Several of the same representatives of other federal agencies participate in both processes.

Third, there has and continues to be considerable interchange and discussion among State Department representatives and representatives of other federal agencies involved in implementing both conventions. We anticipate that such interchange may deepen in the future as both conventions face similar implementation issues.

Question. Will biodiversity concerns be raised by the Administration at intergovernmental meetings of the Climate Convention, and vice-versa?

Answer. Yes, the habitats of millions of species—and the species within them—could well be adversely affected by global warming. It will be vital not to compartmentalize U.S. concerns about biodiversity and global warming. For this reason, U.S. biodiversity concerns and U.S. concerns about global warming will be raised reciprocally under both conventions.

Question. Does the U.S. Climate Action Plan take into account biodiversity concerns? If not, will these concerns be integrated into the plan in the future?

Answer. President Clinton released the U.S. Climate Change Action Plan in October 1993 to demonstrate specifically how the United States will meet its commit-

ment to reduce U.S. greenhouse gas emissions to their 1990 levels by the year 2000. The Action Plan, which acknowledges biodiversity concerns, focuses on U.S. efforts to mitigate climate change. The Action Plan will, however, form the cornerstone of the U.S. submission to the Conference of the Parties of the United Nations Framework Convention on Climate Change that is due by September 21, 1994. The U.S. national submission will address not only U.S. mitigation efforts but a host of other issues, including U.S. biodiversity concerns as they relate to global warming.

In addition, the Intergovernmental Panel on Climate Change, which embarked on its Second Assessment Report in November 1992, will systematically address biodiversity concerns in the report of its Working Group II (on Impacts, Adaptation and Mitigation). Dr. Robert T. Watson, Associate Director for Environment, in the White House Office of Science and Technology Policy co-chairs the IPCC's Working Group II, and has been a strong advocate of integrating biodiversity concerns into the assessment of climate change.

U.S. IMPLEMENTATION—FOREST MANAGEMENT

Question. Please describe the Administrations's plans for implementing its pledge to attain sustainable management of all U.S. forests by the year 2000.

What is the Administration's thinking on how to best address forest protection at the global and regional levels? For example, is a Convention appropriate, or did this idea fall by the wayside at the Earth Summit?

Should forest protection be the subject of special consideration at future Conferences of the Parties to the Biodiversity Convention?

Answer. As you may be aware, last June at the European Ministerial on Forests in Helsinki, the U.S. announced its commitment to the goal of achieving sustainable management of US forests by the year 2000. We were the first country in the world to make this commitment, although others have joined us since. We plan to move forward on this commitment by working with the community of forest interests in and out of the government to develop criteria and indicators for sustainable forest management. On federal lands, we are already in the process of implementing an ecosystem approach to forest management.

Regionally, we believe it would be useful to develop a consensus on broad criteria and indicators for the sustainable management of temperate and boreal forests as a whole. Canada has taken some steps in this direction already, and we are working with them. Regarding a global forest convention, we are not sure that opening negotiations at this time would be productive. Support for a convention by developing countries, which is essential, does not appear widespread. We will have a clearer idea of the likelihood of a convention following the forest review to be undertaken by the Commission on Sustainable Development next Spring.

Forest ecosystems produce a wide diversity of economic and ecological benefits, of which biological diversity is only one. We would expect the biodiversity convention to focus on the biodiversity values of forests. While the COP should take the topic up where relevant during the course of its work, we do not expect at this time for forests, which are addressed in many multilateral fora, to receive special consideration by the COP. The outcome of the CSD review of forests should clarify where, when and how forests should be addressed.

ARTICLE 5—COOPERATION

Question. What specific steps is the United States currently taking that would comply with Article 5, which requires Parties to cooperate on conservation and sustainable use of biological diversity in respect to areas beyond national jurisdiction on matters of mutual interest?

What steps does it plan to take in the future? In particular, could you please briefly outline the administrations's plans for areas such as the following that appear to be particularly relevant: the Arctic, including the Arctic Environmental Protection Strategy; the Caribbean, including the Specially Protected Areas and Wildlife (SPA) Protocol to the Cartagena Convention; the 1940 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Western Hemisphere Convention); and Coral Reef Protection, including the Coral Reef Initiative.

Answer. Our major forum for cooperation in the Arctic is the Arctic Environmental Protection strategy, signed 3 years ago in Rovaniemi, Finland. We have made progress on environmental protection under this Strategy, as well as other related activities. With specific regard to wildlife, the AEPS has created a working group for the Conservation of Arctic Fauna and Flora to address issues specific to wildlife, habitat protection and other related matters.

In regard to the SPAW Protocol, we believe it can be a powerful tool in protecting wildlife and habitats of special concern in the Caribbean. Following U.S. ratification

we will be in a strong position to urge other Caribbean countries to ratify and, thereby, speed SPAW's entry into force. As you are aware the Protocol is currently pending before your Committee. We urge the Foreign Relations Committee to report favorably the SPAW Protocol with the reservations and understanding proposed by the Department of State as soon as possible with a string recommendation that the Full Senate give early advice and consent to ratification. Until Protocol does enter into force we will continue to participate in the SPAW Interim Scientific and Technical Committee that is developing interim recommendations on species and habitat protection. We are also funding specific projects aimed at protecting particular species and habitats such as turtles, manatees and coral reefs.

Within the Organization of American States we are working with other nations of the hemisphere to identify ways to reinvigorate the Western Hemisphere Convention. In the meantime, we continue an extensive bilateral program with Latin American and Caribbean nations within the Convention's present framework.

The Administration is currently developing a Coral Reef Initiative to focus special attention on coral reefs and related ecosystems (mangroves and seagrass beds), which are the marine equivalents of tropical forests in terms of biodiversity. The initiative under consideration is expected to focus on improving the coordination among the many disparate programs, both international and domestic, and forge partnerships among countries with an interest in these resources.

WITHDRAWAL

Question. Some observers have expressed the view that, given the Convention's vagueness in some areas of concern for the United States, the Administration should articulate criteria under which the United States would withdraw from the Convention.

What are the Administration's views in this area?

Answer. We do not anticipate that withdrawal from the Convention will be necessary. However, Article 38 of the Convention expressly sets forth procedures that any Party may invoke to withdraw from the Convention. If it becomes clear that the U.S. long-term interests will not be served by continued participation in the Convention, the U.S. will consider all its options. If necessary, the U.S. would exercise its right to withdraw from the Convention.

Question. Under what circumstances do you think the U.S. should withdraw from the Convention?

Answer. We cannot speculate on what combination of circumstances might cause the U.S. to consider withdrawing from the Convention.

PROTOCOL ON BIOSAFETY

Question. What are the Administration's views on the desirability of such a protocol on biosafety pursuant to Article 19(3) of the Convention?

Can you assure the Committee that if negotiations on such a Protocol were initiated, interested parties in the United States, including industry and environmental groups, would be consulted in the formulation of the U.S. position towards those negotiations?

Answer. The Convention calls in Article 19(3) for consideration of the need for and modalities of a protocol on biosafety.

The United States supports the safe use of biotechnology and full implementation of the relevant articles of the Convention in pursuit of this objective.

Based on U.S. experience in the development and application of biosafety regimes, the substantial amount of biosafety related activities taking place in other fora and the recognized threats to biodiversity demanding priority attention, the Administration does not believe that a protocol on biosafety under this convention is warranted.

The United States will look forward to sharing our views and relevant data with other parties as the Conference of Parties pursues a scientifically based analytically sound process to consider the need for a protocol as required by Article 19(3) of the Convention. However, should discussions on this issue proceed, the Administration, in close consultation with the interested parties including the biotechnology industry and environmental groups, will work to ensure that any biosafety regime that might arise from the Convention is scientifically based and analytically sound.

RESPONSES OF TIMOTHY E. WIRTH TO QUESTIONS ASKED BY SENATOR MURKOWSKI

Question. The Bush Administration did not sign the treaty for a variety of reasons—its failure to protect intellectual property rights and uncertainties about the financing mechanisms to name a few.

The Clinton Administration has issued a series of statements outlining U.S. "understandings" on these issues that would seem to provide all of us some greater comfort in these areas.

The Biodiversity Convention prohibits reservations—so what is the legal standing of these "understandings?"

Do they become part of the text of the Treaty?

Answer. No. However, the understandings are included in the United States instrument of ratification, to be deposited with the United Nations. The United Nations will circulate our understandings to all Parties and signatories.

Question. Do they provide us with sufficient protection in the event of a dispute submitted for arbitration?

Answer. First, it should be noted that the United States will not opt for compulsory dispute resolution under the Convention. The legal effect of understandings has not been definitively established. However, at a minimum, an understanding indicates an authoritative statement of the U.S. interpretation of a provision, puts other parties on notice of the U.S. position, and estops them from later claiming that the U.S. interpretation is being put forward in bad faith.

Most of our statements of understanding are derived from statements made by the U.S. and other countries during the negotiations. We believe all are supported by the text of the Convention and its object and purpose. Thus we have credible arguments to respond to any questions concerning the basis for our statements of understanding.

Question. The Convention requires the developed nations to pay for the costs incurred by the developing nations in meeting the obligations of the Convention.

What do you estimate these cost to be?

Answer. First, it must be emphasized that developed country Parties do not have an obligation to fund all biodiversity projects taken by developing countries in implementation of the Biodiversity Convention. As set forth in the U.S. statement of understanding, our obligations under the Convention are limited to providing new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs * * * of implementing measures which fulfill the obligations of this Convention *and that are agreed between a developing country Party and the institutional structure operating the financial mechanism.*

Agreement between the developing country Party and the institutional structure (i.e., the GEF) on a project will be constrained not only by the guidance from the Conference of the Parties and by decisions taken by the governance structure of the GEF, but by the amount of resources available to the GEF. The amount of resources available to the GEF will be determined by regular, voluntary replenishment by the donor countries, taking into account the guidance from the Conference of the Parties on the "amount of resources needed" by the financial mechanism. As stated by nineteen countries at the time of the adoption of the Convention's Final Act and as reiterated in the U.S. statement of understanding, the authority of the Conference of the Parties concerning amount of resources needed does not extend to the extent or nature and form of the contributions of the Contracting Parties.

As stated above the current GEF replenishment will total \$2 billion of which biodiversity projects will have a substantial share. We cannot at this time predict the amount of future replenishment, and the Intergovernmental Committee on the Convention on Biological Diversity has only just begun to prepare its advice on the "amount of resources needed" by the financial mechanism.

Question. What is the U.S. share?

Answer. The United States has pledged \$430 million to the replenishment of the GEF over a four year period. This represents 21 percent of the total replenishment.

Question. Will the State Department be seeking new funding to meet these obligations, or can they be met with existing resources?

Answer. The United States obligations under the Convention will be fulfilled through its contributions to the GEF, for which a statutory appropriation is required. The Treasury Department will be responsible for requesting appropriations for this purpose. Congress has authorized and appropriated to the Department of the Treasury, subject to certain conditions, \$30 million for FY 94 as a U.S. contribution to the GEF. The Administration has also requested an additional \$400 million, to be paid in over the next four fiscal years, for the GEF. Biodiversity activities are expected to take up a significant share of the total GEF replenishment.

Question. The definition of "biodiversity" in the treaty is broad and vague.

Does diversity include sex and age classes within a species or stock? If so, could such an interpretation preclude any harvesting that does not take individuals in the same ratio as they exist in a population?

In Alaska, we have purposely distorted populations in favor of females to increase productivity. Could this be prohibited under the treaty?

Answer. While the Convention's definition of the complex of biodiversity is by necessity broad, our interpretation of this definition would not preclude any activity authorized by existing laws, and would not require us to do anything more. This is an issue that pertains to existing laws that affect wildlife management. The treaty does not create, supplant, or change any laws or authorities now held by Parties to the Convention. As the President stated in his letter of transmittal, "existing programs and authorities are considered sufficient to enable any activities necessary to effectively implement our responsibilities under the Convention."

Question. Is it in the realm of possibility that actions by the parties to the treaty could result in mandatory prohibitions on habitat uses? For example, could any prohibitions on the exploration or development of U.S. oil or mineral reserves arise from this treaty?

Answer. Articles in the treaty parallel the approach of U.S. law. The treaty does not go beyond what the U.S. already does. In our view, the treaty does not and cannot obligate the U.S. to impose specific prohibitions on, for example, oil and gas or mineral activity could result from this treaty. Any such prohibitions would remain a domestic decision.

Question. Explain how and in which instances "national strategies, plans and programs" will be developed as required by the treaty. Would this or could this include strategies for the management of national and international fisheries resources, for instance?

Answer. The Convention does not require that each Party develop a single national biodiversity strategy. It requires development of strategies, plans or programs, or adaptation of existing strategies plans or programmes which reflect the measures set out in the Convention. As stated in the Letter of Transmittal the United States has a tightly woven partnership of Federal, State and private sector programs in management of our lands and waters and their resident and migratory species. The United States does not intend to disrupt the existing balance of Federal and State authorities through this Convention. It is our conclusion that we have met the letter of the Convention with our existing efforts.

It is also true that biodiversity considerations are increasingly being taken into account in the programmes, plans, and strategies of resource management agencies, and in inter-agency efforts. To the extent that strategies for national and international fisheries resources evolve in this direction this would be consistent with, but not required by, the Convention.

Question. The Convention seems to mirror or anticipate the creation of the National Biological Survey at the Department of the Interior. This National Biological Survey (NBS) has not yet been authorized by law.

Is such a National Biological Survey required for the U.S. to meet its obligations under the treaty?

How will the implementation of this treaty be integrated with the activities of the NBS?

Answer. The Administration has determined that no additional legislation is required to implement the Convention on Biological Diversity. Creation of the National Biological Survey (NBS) is not required for the U.S. to meet its obligations under the Convention. Existing programs and related efforts are sufficient to allow the United States to fulfill the inventory and monitoring responsibilities undertaken as a Party to the Convention on Biological Diversity. The new organization will enable the U.S. to meet these demands more efficiently by making information more accessible and by focusing scientific resources more efficiently.

With respect to authorization, the NBS was created by Secretarial Order in September, 1993. No authorizing legislation is necessary for the Secretary to reorganize existing programs within the Department in this manner. The same process was used to establish the Minerals Management Service (MMS) in 1982. MMS has been operational for 12 years. The NBS is essentially a reorganization of existing biological research, inventory and monitoring, and information transfer programs from seven bureaus of the Department of the Interior.

Question. You are unlikely to successfully implement a national biological diversity program without meaningful participation by the States.

How will you facilitate State participation in these efforts?

The record of the Administration to involve the States in existing ecosystem management programs have been, according to officials in my State, less than satisfactory. Why should they believe that this will improve if this treaty is ratified and implemented?

Are there any "unfunded mandates" to States that will result from the implementation of this treaty?

Can States qualify as NGOs at future meeting of the parties?

Existing lawsuits and legal decisions dealing with the scope of the Federal Advisory Committee Act have placed a cloud over the role states will play in developing meaningful partnerships with the federal agencies in these areas. Is this administration in favor of exempting the implementation of this treaty from the provisions of the Federal Advisory Committee Act?

Answer. The Administration has consulted in depth with the International Association of Fish and Wildlife Agencies (IAFWA), which represents State Fish and Wildlife Agencies, on the Convention on Biological Diversity. A representative of the IAFWA was on the United States delegation to the negotiations of the Convention as well as to the First Inter-governmental Meeting on the Convention on Biological Diversity. While we are open to hearing the views of any State government, our principal contact to date has been the IAFWA. We will continue to work closely with and cooperate with the IAFWA and other constituents on Convention implementation and in preparations for the second Inter-governmental Committee Meeting, the Conference of the Parties and other future meetings.

In his Letter of Transmittal President Clinton states that "the Administration does not intend to disrupt the existing balance of Federal and State authorities through this Convention. Indeed the Administration is committed to expanding and strengthening these relationships." Both in matters under the general purview of the Convention and in other matters, this Administration will work actively with States.

Following the conclusion that existing programs and authorities are considered sufficient to enable any activities necessary to implement our responsibilities under the Convention, there are no unfunded mandates to the States that will result from implementation of this treaty.

No. Article 23 of the Convention provides that any body or agency, whether governmental or non-governmental, qualified in the fields relating to conservation and sustainable use of biological diversity may be considered for observer status. Because States have a governmental function, they do not qualify as non-governmental organizations. Nor under U.N. practice would individual States within a federal system qualify as "governmental bodies."

As stated above, the Administration is committed to working closely with and cooperating with the IAFWA and other constituents on Convention implementation and in preparations for the second Inter-governmental Committee Meeting, the Conference of the Parties and other future meetings, so that the views of States are accurately and adequately reflected in U.S. positions.

President Clinton stated in his letter of transmittal that this Administration is committed to expanding and strengthening the federal, state and private sector partnership in management of our lands and waters and their resident migratory species. The President also stated that we look forward to continued cooperation with the States in conserving biological diversity and promoting the sustainable use of its components. We believe cooperation in implementing the Biodiversity Convention can be achieved without a change to the Federal Advisory Committee Act.

Question. U.S. Fish and Wildlife Director Mollie Beattie has indicated that Federal Aid in Restoration funds distributed to the states through the Pittman-Robertson and Dingell-Johnston/Wallop-Breaux programs should emphasize regional and national priorities

Will any of these funds be targeted, required or used to implement requirements of this treaty?

Answer. It was never the intent of the Fish and Wildlife Service to target Federal Aid dollars or to require the States to help fund national and regional priorities, such as those related to the Convention on Biological Diversity. We do not have legal authority to mandate that States spend their money on projects not consistent with the purposes of the Federal Aid in Wildlife and Sport Fish Restoration Acts. Many States currently cooperate with the Service on major resource issues or priorities. These cooperative efforts are focused primarily on migratory birds, endangered species, and wetland restoration. It is the desire and intent of the Service to enhance these cooperative ventures by asking the States to assist us on identifying major resource issues and in the development of strategies for addressing these issues. State participation would be totally voluntary. In addition, we do not have legal authority to mandate States to spend their money on projects not consistent with the purposes of the Federal Aid in Wildlife and Sport Fish Restoration Acts.

RESPONSES OF TIMOTHY E. WIRTH TO QUESTIONS ASKED BY SENATOR BROWN

Question. Adequate protection of intellectual property has been cited by both President Clinton and the State Department as a matter of paramount interest. As a practical matter, can you tell us what steps are open to the United States once we become a party to the Biodiversity Convention, if in the future we should become dissatisfied with the protection of intellectual property which is being afforded under the Convention?

Answer. We will encourage countries to rely on the Convention as an authority and as an impetus for improving their domestic intellectual property systems. We will hold countries to their obligations under the GATT's Trade Related Aspects of Intellectual Property Rights Agreement (TRIPs), which sets a minimum floor of protection for intellectual property. We will seek further improvements in intellectual property protection in the markets of our trading partners.

The Administration will continue to address intellectual property concerns as a trade matter. We will rely, as we have in the past, on bilateral consultations and negotiations to address intellectual property concerns we have with our trading partners. We will also rely on the soon-to-be established World Trade Organization to address intellectual property issues covered by the TRIPs Agreement.

With respect to the Convention, we will actively encourage the Conference of the Parties to focus its attention on the broader issues of technology transfer and scientific and technical cooperation, rather than the specific question of intellectual property standards.

To the extent that intellectual property issues are raised in the activities under the Convention, we will actively advance our views in support of adequate and effective levels of protection for intellectual property.

Any action that has the effect of denying effective protection of intellectual property rights will continue to be viewed by the United States as an onerous and egregious burden on trade that is actionable under domestic law.

Question. In the implementation of this Convention, it is possible to establish some sort of linkage between the protection afforded intellectual property and the granting of awards for carrying out projects designed to protect biodiversity?

Answer. In the GEF, we will continue to promote the adequate and effective protection of IPRs and to facilitate the transfer of technology, consistent with Article 16(2) of the Convention. Insofar as the GEF has agreed to follow the policies, strategy, program priorities, and eligibility criteria of the Convention, we would expect that the programs and projects of the GEF will be in accordance with Article 16(2).

Question. The United States has repeatedly stated its opposition to a formulation of a biosafety protocol under the Convention. If the Conference of Parties nevertheless decides to go forward with the formulation of such a Convention, what will be the position of the United States? Would the United States be bound by such a biosafety protocol?

Answer. Should discussions on the issue of a biosafety protocol proceed, the Administration, in close consultation with the interested parties including the biotechnology industry and environmental groups, will work to ensure that any biosafety regime that might arise from the Convention is scientifically based and analytically sound.

Should a protocol be concluded under the Convention the United States would not be bound to that protocol unless the United States becomes a Party to it.

Question. As is the case with every international agreement of this magnitude, it contains provisions which are not precise and could be the subject of varying interpretation. Will you state for the record the terms and conditions under which the United States would feel it necessary to withdraw from the Treaty over matters of interpretation?

Answer. We do not anticipate that withdrawal from the Convention will be necessary. However, Article 38 of the Convention sets forth express procedures that any Party may invoke to withdraw from the Convention. If it becomes clear that the U.S. long-term interests will not be served by continued participation in the Convention, the U.S. will consider all its options. If necessary, the U.S. would exercise its right to withdraw from the Convention.

Question. Once the Convention is in place, what do you estimate the total financial commitment of the U.S. government to be?

Answer. The U.S. has pledged \$430 million to the restructured GEF over the next four years. This voluntary contribution will satisfy our financial commitments under the Convention for the current replenishment period. Of the current GEF replenishment which totals \$2 billion, a substantial portion will go to Biodiversity Convention related projects. Future U.S. decisions on our voluntary financial commitments will be taken before future GEF replenishment sessions. In determining our voluntary

contribution the U.S. will take into consideration guidance from the Conference of Parties to the Convention as to the amount of resources necessary, as well as evaluation of factors of the GEF's performance such as the GEF's capacity to process projects and the recipients' absorptive capacity to receive projects. Most importantly the United States will systematically evaluate the GEF policy framework and our own capacity to contribute.

Question. Have you established a ceiling of financial commitment which the U.S. Government will not exceed? If so, what is the ceiling?

Answer. As stated above we have made a voluntary pledge to the current replenishment of the GEF. The United States will make decisions with regard to future voluntary funding levels prior to future GEF pledging sessions, taking into account the factors enumerated above.

The Administration will not request funding for meeting our commitments unless we are convinced that a legitimate need exists, we are satisfied that our resources will be wisely spent, and we have made our own determination of an appropriate amount for the U.S. to pay.

Question. What safeguards exist in the Convention which protect the U.S. government from unacceptable financial commitments?

Answer. The Conference of Parties (COP) to the Convention does not set the levels of financial commitments of Parties. The COP can only give "guidance" to the financial mechanism on the amount of resources needed.

It is important that the United States participate in the first COP to play a role in preparing this guidance. In this regard it should also be noted that although the COP cannot in any way bind the donor nations to financial commitments, U.S. participation in development of rules of procedure at the first COP will ensure that the rules with regard to funding fully protect donor interests.

The GEF will make all decisions with respect to operational modalities to translate policy guidance from the COP into projects. The reforms in the GEF guarantee that the United States, as a large donor, will have a commensurate influence over funding decisions.

All U.S. financial commitments under the Convention are met through our contribution to the financial mechanism. As stated above, our determination of the U.S. voluntary contribution to the GEF will be guided by input from the COP to the Convention, and the GEF, as well as our own evaluation of the success of the GEF and our capacity to contribute.

The total amount of resources available to the GEF will be determined by the donor countries, taking into account COP guidance on amount of resources needed, and the programming requests of the GEF.

Finally, it must be emphasized that developed countries do not have an obligation to fund all measures taken by developing countries to implement the Convention, but only the agreed full incremental costs of implementing measures that are agreed between a developing country party and the institutional structure operating the financial mechanism.

Question. Could you explain the financial mechanism in the Convention and how it relates to the Conference of Parties?

Answer. Article 21 of the Convention establishes a mechanism for the provision of financial resources to assist developing countries in implementation of the Convention. The Convention also provides for an institutional structure to operate the financial mechanism. The GEF has been acting as the institutional structure on an interim basis, and we anticipate that it will be designated as the permanent institutional structure at the first Conference of the Parties or shortly thereafter.

The relationship between the GEF and the Conference of the Parties is established in the Convention and is further addressed in the U.S. statements of understanding. Under the Convention, authority of the Conference of the Parties relates to determining, for the purposes of the Convention, the policy, strategy, program priorities and eligibility criteria relating to the access to and utilization of financial resources under the financial mechanism. The GEF, however, will make all decisions with respect to operational modalities to translate that policy guidance into projects. The Conference of the Parties will also provide advice as to "amount of resources needed" by the financial mechanism. However, as the U.S. statement of understanding emphasizes, nothing in the Convention authorizes the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties to the institutional structure.

Question. How does the State Department letter of submittal modify the potential financial commitments of the U.S. Government?

Answer. The State Department letter of submittal does not modify the financial commitments of the U.S. government. It merely clarifies the U.S. interpretation of the text of the Convention on issues of the authority of the Conference of the Parties

over the financial mechanism, the requirement that both costs and measures be agreed between the GEF and the developing country, and the scope of the authority of the Conference of the Parties with respect to the "amount of resources needed" by the financial mechanism.

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